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Official Grain Grading Guide

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Canada

Official Grain Grading Guide

1. Test weight
2. Moisture testing
3. Specifications for sieves
4. Wheat
5. Rye
6. Barley
7. Oats
8. Triticale
9. Mixed grain
10. Canola and rapeseed
11. Flaxseed
12. Domestic mustard seed
13. Buckwheat
14. Sunflower seed
15. Safflower seed
16. Peas
17. Corn
18. Lentils
19. Beans
20. Soybeans
21. Faba beans
22. Chickpeas
23. Canary seed
24. Screenings
25. Experimental grades of wheat
26. Sample feed grain
27. Standard abbreviations
28. Glossary
29. Active Grain Standards and Guides List

Official Grain Grading Guide — Revisions

August 1, 2025
Revised July 1, 2026

Date	CAR#	Chapter	Remarks	Page
July 1, 2026	0348	Moisture testing	Updated chart numbers for lentils, other than red	2-5
July 1, 2026	0348	Wheat	For CEAD, tolerances updated for penetrated smudge, and tolerances added for severe midge and for total severe midge and penetrated smudge	4-62
July 1, 2026	0348	Corn	Updated heated definition and added information on how to obtain the Canadian Grain Commission visual image guide for heated corn	17-10
July 1, 2026	0348	Corn	Added grading factor information for red streak	17-10
July 1, 2026	0348	Active Grain Standards and Guides list	Updated to reflect the revised active standards and guides list	29-3
August 1, 2025	0313	Moisture testing	Addition of dates to moisture conversion tables so they are consistent with the Canadian Grain Commission website	2-4 to 2-6
August 1, 2025	0313	Specifications for sieves	Clarification on use of a mechanical sieve shaker	3-1
August 1, 2025	0313	Specifications for sieves	Added 7.0 mm round hole metric sieve	3-1
August 1, 2025	0313	Wheat	Clarification on composition of attritional material	4-7
August 1, 2025	0313	Wheat	Clarification on sieve use	4-11, 4-33
August 1, 2025	0313	Wheat	Note added to clarify composition of total heated kernels	4-22
August 1, 2025	0313	Wheat	Mildew standards updated to reflect 2025 Western standards	4-25
August 1, 2025	0313	Wheat	Revised procedure for determining percentage of shrunken and broken kernels	4-29
August 1, 2025	0313	Wheat	Clarification on grading for Mildew in CWAD	4-40, 4-75
August 1, 2025	0313	Wheat	Re-oriented Commercially clean determinant table to vertical format	4-70
August 1, 2025	0313	Canola and Rapeseed	Clarification that conspicuous admixture is not added to dockage in Sample Grade canola	10-8
August 1, 2025	0313	Peas	Revised recommended sample size for bleached peas	16-10

August 1, 2025	0313	Peas	Information added on how to obtain the Canadian Grain Commission guide for bleached green peas	16-11
August 1, 2025	0313	Peas	Updated definition of Immature peas	16-16
August 1, 2025	0313	Lentils	Clarification that insect parts are handpicked from the sieved sample	18-6
August 1, 2025	0313	Glossary	Clarification on composition of attritional material	28-1
August 1, 2025	0313	Active Grain Standards and Guides list	Changed chapter name. Updated to reflect revised active Western standards and guides.	29-1, 29-2
August 1, 2025	0313	Chapters 4, 7, 16, Chapters 18 to 20	Updated definition of Standards	4-13, 7-8, 16-9, 18-10, 19-6, 20-8
August 1, 2025	0313	Chapters 4 to 23, Chapter 25	Clarification of information under Contaminated grain	4-17, 5-10, 6-14, 7-10, 8-10, 9-9, 10-12, 11-10, 12-13, 13-12, 14-9, 15-6, 16-12, 17-8, 18-13, 19-9, 20-10, 21-8, 22-7, 23-7, 25-4
August 1, 2025	0313	Chapters 4 to 23, Chapter 25	Clarification of procedures for samples containing fertilizer pellets	4-19, 5-11, 6-17, 7-13, 8-12, 9-10, 10-14, 11-12, 12-15, 13-14, 14-10, 15-7, 16-13, 17-10, 18-15, 19-11, 20-12, 21-10, 22-9, 23-8, 25-5
August 1, 2025	0313	Chapters 4 to 13, Chapter 18	Clarification on sieve use	4-14, 5-6, 6-9, 7-6, 8-6, 9-5, 10-5, 10-6, 11-6, 12-6, 13-6, 18-7

1. Test weight

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre (kg/hL).

Equipment needed to determine test weight:

0.5-litre (0.5-L) measure

A cylindrical shaped cup with an inside diameter of approximately 90 millimeters (mm) and a height of approximately 77.5 mm. The 0.5-L measure is calibrated to contain 500 millilitres (mL) of water, ± 1 mL, at 20 °C.

Cox funnel

A funnel with a 3.81 centimetre (cm) opening and a drop of 4.41 cm, measured from the opening in the funnel to the top of the 0.5-L measure, used to uniformly direct the flow of grain into the measure.

Striker

A piece of round hardwood, 2.2 cm in diameter and approximately 23 cm in length.

Scale

Any electronic metric scale approved for use in trade by Measurement Canada. The scale must hold a current Measurement Canada certificate.

Test weight conversion charts

Charts used to convert the weight of grain in the 0.5-L measure from grams to kilograms/hectolitre. These charts are available on the website of the Canadian Grain Commission. Alternatively, the test weight calculators can be used.

Procedure:

1. Fill the 0.5-L measure to overflowing with the grain to be tested.
2. Ensure the slide is inserted into the Cox funnel.
3. Pour the contents of the 0.5-L measure, plus an extra handful, into the Cox funnel.
4. Place the 0.5-L measure on a solid base.
5. Position the Cox funnel on top of the 0.5-L measure so that the notched legs of the Cox funnel fit securely onto the measure's rim.
6. Remove the slide on the Cox funnel quickly so that the grain drops evenly into the 0.5-L measure.
7. Carefully remove the Cox funnel from the top of the 0.5-L measure so as not to disturb the grain.

   ▲ **Important:** Any jarring of the 0.5-L measure at this point will result in compaction of the grain in the measure and may produce inaccurate results.

8. Place the hardwood striker on the rim of the 0.5-L measure and using three equal zigzag motions, level off the grain so it is even with the top edge of the measure.
9. Pour the grain remaining in the 0.5-L measure into the scale pan.
10. Determine the weight of the grain in the scale pan in grams.
11. Convert the weight of grain in the 0.5-L measure from grams to kilograms per hectolitre using the Canadian Grain Commission's test weight conversion charts or calculators.

Note: To account for the compaction of grains, the Canadian Grain Commission uses a correction, known as the compaction factor, to predict test weight values in units of kilograms per hectolitre. Data is used to develop statistical models that determine the relationship between the weight of uncompacted grain and the weight of compacted grain as determined by a Schopper chondrometer. Doubling the weight of uncompacted grain in a half litre measure and dividing by ten will not accurately predict test weight in kilograms per hectolitre. The Canadian Grain Commission's test weight conversion charts and calculators incorporate the compaction factor for various grains and must be used to convert test weight to kilograms per hectolitre.

Test weight is determined after the removal of dockage as defined in the cleaning procedures described for each grain, except for corn.

Test weight for corn is determined prior to removal of cracked corn and foreign material (CCFM). When the terms of delivery or terms of a contract state that dockage can be deducted from corn, the test weight is determined after the removal of dockage.

Note: Samples are graded *Sample Account Light Weight* only if the test weight is lower than the minimum test weight established for the lowest grade of that grain and in accordance with the Order of Precedence as defined in the Glossary of this guide.

2. Moisture testing

Introduction to moisture testing.....2-2

Moisture Specifications.....2-3

Determining moisture content for special cases.....2-7
Optional analysis.....2-7
Corn (Model 919/3.5” Only) 2-7

Introduction to moisture testing

Moisture testing means analyzing a grain sample for the percentage of moisture contained within it.

Moisture content can affect the test weight and the appearance of the grain. Grain that is too moist is susceptible to deterioration.

Moisture tests are performed on samples free of dockage.

Moisture tests on corn are performed after the removal of cracked corn and foreign material (CCFM).

Industry Services will determine the moisture content of grain with a Unified Grain Moisture Algorithm (UGMA) moisture meter or with a Near-infrared transmittance (NIT) instrument.

Model 919/3.5” moisture meter conversion tables continue to be monitored and updated. Conversion tables, moisture calculators and guidelines for using the model 919/3.5” moisture meter can be found at https://grainscanada.gc.ca/en/grain-quality/grain-grading/grading-factors/moisture-content/

Samples testing within 0.5% (+) or (-) of the tough, damp, moist or wet cut off levels, are to be retested three (3) times using different moisture meters when possible. The final reported moisture content will be an average of the three tests.

Moisture Specifications

Grain that contains excessive moisture shall be graded according to the specifications for the grade that would be assigned to that grain if it did not contain excessive moisture, except that there shall be added to and made part of the grade name the word “Tough”, “Damp”, “Moist” or “Wet” according to the percentage of moisture set out in the Off Grades of Grain and Grades of Screenings Order.

The chart on the next three pages outlines the moisture specifications and, if the model 919/3.5’ moisture meter is used, the conversion table number and representative portion required to determine the moisture content of each type of grain is provided.

Conversion tables are not available for all grains. The following information can be found on the CGC website.

- Conversion tables for applicable grains. See *Conversion tables for use with Model 919/3.5" or equivalent moisture meters*
- For wheat, oats and barley samples with low test weight, normal procedures for determining moisture content will give inaccurate results. See *Estimating moisture content for lightweight wheat, oats and barley samples.*
- For samples with moisture values above the range of the conversion table using the 919/3.5’ moisture meter, see *High moisture samples*.
- For beans for which there are no conversion charts, see *Beans with no conversion tables.*

Grain	Moisture Meter Model 919/3.5"		Moisture Specifications				
	Weight (g)	Date and Conversion table Number	Straight (%)	Tough (%)	Damp (%)	Moist (%)	Wet (%)
Barley							
Food (covered) (>52 kg/hl)	225	2022-07, 14	less than 13.6	13.6-17.0	over 17.0		
Food (hulless)	225	1994-08, 1	less than 14.1	14.1-17.0	over 17.0		
General Purpose (covered) (>52 kg/hl)	225	2022-07, 14	less than 14.9	14.9.17.0	over 17.0		
Lightweight (covered) (< 52kg/hl)	200	1979-rev., 10	less than 14.9	14.9-17.0	over 17.0		
General Purpose (hulless)	225	1994-08, 1	less than 14.9	14.9-17.0	over 17.0		
Malting (covered) (>52 kg/hl)	225	2022-07, 14	less than 13.6	13.6-17.0	over 17.0		
Malting (hulless)	225	1994-08, 1	less than 13.6	13.6-17.0	over 17.0		
Beans							
Azuki	250	2010-07, 1	less than 18.1	No tough	over 18.0		
Black	250	2018-07, 3	less than 18.1	No tough	over 18.0		
Cranberry	225	2006-07, 2	less than 18.1	No tough	over 18.0		
Dark red kidney	250	2006-07, 2	less than 18.1	No tough	over 18.0		
Great northern white	250	2016-07, 1	less than 18.1	No tough	over 18.0		
Light red kidney	250	2011-07, 1	less than 18.1	No tough	over 18.0		
Otebo	250	2014-07, 1	less than 18.1	No tough	over 18.0		
Pea Bean	250	2019-07, 3	less than 18.1	No tough	over 18.0		
Pinto	250	2007-07, 2	less than 18.1	No tough	over 18.0		
Small red	250	2014-07, 1	less than 18.1	No tough	over 18.0		
White kidney	250	2011-07, 1	less than 18.1	No tough	over 18.0		

Grain	Moisture Meter Model 919/3.5"		Moisture Specifications				
	Weight (g)	Date and Conversion table Number	Straight (%)	Tough (%)	Damp (%)	Moist (%)	Wet (%)
Buckwheat	225	1978-04, 3	less than 16.1	16.1-18.0	over 18.0		
Canary seed	250	2021-07, 1	less than 13.1	13.1-17.0	over 17.0		
Canola and Rapeseed	250	2014-07, 6	less than 10.1	10.1-12.5	over 12.5		
Chickpeas	250	2020-07, 2	less than 14.1	14.1-16.0	over 16.0		
Corn							
Under 19.9% moisture	250	2000-07, 6	less than 15.6	15.6-17.5	17.6-21.0	21.1-25.0	Over 25.0
20.0% moisture and over (adjusted moisture value using table 11A result and according to test weight. Refer to page 2-7 for details)	175	2000-07, 11A + 2000-07, 11B	less than 15.6	15.6-17.5	17.6-21.0	21.1-25.0	Over 25.0
Faba beans	250	1977-02, 2	less than 16.1	16.1-18.0	over 18.0		
Flaxseed	225	2013-07, 7	less than 10.1	10.1-13.5	over 13.5		
Lentils							
Lentils, other than red	250	2026-07, 4	less than 14.1	14.1-16.0	over 16.0		
Lentils, red	250	2018-07, 4	less than 13.1	13.1-16.0	over 16.0		
Mixed Grain		Use the conversion table and tough and damp ranges for the predominant grain.					
Mustard Seed (Domestic)							
Brown mustard	250	2007-07, 11	less than 9.6	9.6-12.5	over 12.5		
Oriental mustard	250	2007-07, 10	less than 9.6	9.6-12.5	over 12.5		
Yellow mustard	250	2007-07, 9	less than 9.6	9.6-12.5	over 12.5		
Oats							
Hulled oats	200	2001-08, 6	less than 13.6	13.6-17.0	over 17.0		
Hulless oats	200	2009-07, 1	less than 13.6	13.6-17.0	over 17.0		
Lightweight oats (<48 kg/hl – calibrate at 73)	140	2003-08, 1	less than 13.6	13.6-17.0	over 17.0		

Grain	Moisture Meter Model 919/3.5"		Moisture Specifications				
	Weight (g)	Date and Conversion table Number	Straight (%)	Tough (%)	Damp (%)	Moist (%)	Wet (%)
Peas, Green and Yellow	250	2025-07, 4	less than 16.1	16.1-18.0	over 18.0		
Rye	250	2022-07, 6	less than 14.1	14.1-17.0	over 17.0		
Safflower seed (calibrate at 73)	150	1992-08, 1	less than 9.6	9.6-13.5	13.6-17.0	17.1-22.0	over 22.0
Soybeans	225	2014-07, 9	less than 14.1	14.1-16.0	16.1-18.0	18.1-20.0	over 20.0
Sunflower seed (calibrate at 73)	150	1978-10, 3	less than 9.6	9.6-13.5	13.6-17.0	17.1-22.0	over 22.0
Triticale	250	1981-08, 1	less than 14.1	14.1-17.0	over 17.0		
Wheat							
CWRS (>66kg/hl)	250	2021-07, 12	less than 14.6	14.6-17.0	over 17.0		
lightweight (<66 kg/hl)	225	1979-08, 9	less than 14.6	14.6-17.0	over 17.0		
CWHWS	250	2005-08, 1	less than 14.6	14.6-17.0	over 17.0		
CWAD	250	2020-07, 5	less than 14.6	14.6-17.0	over 17.0		
CWRW	250	2021-07, 6	less than 14.6	14.6-17.0	over 17.0		
CWSWS	250	2025-07, 6	less than 14.6	14.6-17.0	over 17.0		
CWES	250	2002-08, 2	less than 14.6	14.6-17.0	over 17.0		
CPSW	250	2021-07, 3	less than 14.6	14.6-17.0	over 17.0		
CPSR	250	2021-07, 3	less than 14.6	14.6-17.0	over 17.0		
CNHR	250	2023-07, 2	less than 14.6	14.6-17.0	over 17.0		
CWSP		Use the conversion table and tough and damp ranges appropriate to the predominant colour and characteristics of the sample.					
CERS	250	2024-07, 2	less than 14.6	14.6-17.0	over 17.0		
CEHRW	250	2023-07, 2	less than 14.6	14.6-17.0	over 17.0		
CESRW	250	2024-07, 3	less than 14.6	14.6-17.0	over 17.0		
CEAD	250	2020-07, 5	less than 14.6	14.6-17.0	over 17.0		
CEWW	250	2019-07, 6	less than 14.6	14.6-17.0	over 17.0		
CEOW		Use the conversion table and tough and damp ranges appropriate to the predominant colour and characteristics of the sample.					
CEFD		Use the conversion table and tough and damp ranges appropriate to the predominant colour and characteristics of the sample.					

Determining moisture content for special cases

Optional analysis

An optional analysis is the process of determining the weight and grade of grain which would otherwise be assessed as dockage. If a sufficient quantity of grain is available, a moisture test will be done on all grains assigned a grade as part of the optional analysis.

When the grain assigned a grade as part of the optional analysis is not large enough for official moisture testing, and most of the sample is tough, damp, moist or wet, the optional analysis portion is graded tough, damp, moist, or wet without reference to a specific moisture content.

Corn (Model 919/3.5” Only)

See *Determination of dockage* for corn.

1. Remove cracked corn and foreign material.

If the moisture content is…	Use this sieve...
25.0% or less	No. 12 round-hole
25.1 % or more	No. 14 round-hole

2. Choose the appropriate sample size by weight.

If the moisture content is…	Use a sample size of…
under 20.0%	250 g
from 20.0% to 35.0%	175 g

3. Choose the conversion table.

If the moisture content is…	Use conversion table...
20.0% or less	6
from 20.1% to 35.0%	11A - to estimate moisture content based on the dielectric reading and the temperature of the corn 11B - to adjust the preliminary moisture value according to the test weight of the corn sample

3. Specifications for sieves

This table lists the sieves to be used to assess dockage and grading factors. Sieves may be handheld or machine type. When using a handheld slotted sieve, ensure the slotted perforations are parallel with the sieving motion.
Note: Handheld sieves may be mounted in a mechanical sieve shaker. Confirm the counter is set to the specified number of motions and the sieve is positioned correctly.

Sieves for assessing dockage and grading factors

Type	Sieve name	Perforation size (millimetres)	Manufacturer's designation (Fraction of inches)
Round-hole	No. 4.5	1.79	4½/64
	No. 5	1.98	5/64
	No. 5.5	2.18	5½/64
	No. 6	2.38	6/64
	No. 6.5	2.58	6½/64
	No. 7	2.78	7/64
	No. 7.5	2.98	7½/64
	No. 8	3.18	8/64
	No. 8.5	3.37	8½/64
	No. 9	3.57	9/64
	No. 10	3.97	10/64
	No. 11	4.37	11/64
	No. 12	4.76	12/64
	No. 14	5.56	14/64
	No. 15	5.95	15/64
	No. 16	6.35	16/64
	No. 17	6.75	17/64
	No. 18	7.14	18/64
	No. 20	7.94	20/64
	No. 21	8.33	21/64
	No. 22	8.73	22/64
	No. 24	9.52	24/64
Round-Hole Metric	No. 7.0 mm	7.0	N/A
	No. 8.0 mm	8.0	N/A
	No.9.0 mm	9.0	N/A
	No. 10.0 mm	10.0	N/A

Sieves for assessing dockage and grading factors

Type	Sieve name	Perforation size (millimeters)	Manufacturer's designation (Fraction of inches)
Slotted	No. 4.5	1.79 x 12.70	4½/64 x 1/2
	No. 5	1.98 x 19.05	5/64 x 3/4
	No. 6	2.38 x 19.05	6/64 x 3/4
	No. 8	3.18 x 19.05	8/64 x 3/4
	No. 9	3.57 x 19.05	9/64 x 3/4
	No. 11	4.37 x 19.05	11/64 x 3/4
	No. 12	4.76 x 19.05	12/64 x 3/4
	No. 14	5.55 x 19.05	14/64 x 3/4
	No. 16	6.35 x 19.05	16/64 x 3/4
	No. .028	0.71 x 11.90	0.028 x 15/32
	No. .032	0.81 x 11.90	0.032 x 15/32
	No. .035	0.89 x 11.90	0.035 x 15/32
	No. .038	0.96 x 11.90	0.038 x 15/32
	No. .040	1.02 x 11.90	0.040 x 15/32
Buckwheat	No. 5	triangle with 1.98 mm	triangle with 0.078
	No. 6	triangle with 2.26-mm	triangle with 0.089-inch
Wire	No. 3 x 16	3 x 16 mesh per 25.4 mm	3 x 16 wire mesh per inch
	No. 4 x 14	4 x 14 mesh per 25.4 mm	4 x 14 wire mesh per inch
	No. 10 x 10	10 x 10 mesh per 25.4 mm	10 x 10 wire mesh per inch
	No. 9 x 9	9 x 9 mesh per 25.4 mm	9 x 9 wire mesh per inch

4. Wheat

Classes and varieties 4-5
Classes 4-5
Canada Eastern Other Wheat 4-5
Non-registered varieties 4-5

Determination of commercially clean 4-7
Export ready (ER) 4-9
Not ready for export (NRE) 4-9

Determination of dockage 4-10
Definitions 4-10
Dockage not reported 4-10
Normal cleaning procedures 4-10
Composition of dockage 4-11
Cleaning for grade improvement 4-11
Optional analysis 4-12

Grading 4-13
Important definitions 4-13
Net weight of sample 4-13
Hazardous substances in sample 4-13
Rounding rules 4-13
Processed sample 4-13
Standards 4-13
Representative portion for grading 4-14

Grading factors 4-16
Artificial stain (ART STND) 4-16
Binburnt kernels (BBT) 4-16
Blackpoint (BLK PT) 4-16
Broken (BKN) 4-16
Common bunt (stinking smut) (SMUT) 4-17
Contaminated grain 4-17
Contrasting classes (CON CL) 4-18
Darkened kernels (amber durum) 📷 4-18
Dark immature kernels (DKIM) 4-18
Degermed kernels (DGM) 4-18
Earth pellets (EP) 4-18
Ergot (ERG) 4-18
Excreta (EXCR) 4-19
Extraneous material 4-19
Fertilizer pellets (FERT PLTS) 4-19
Fireburnt kernels (FBNT) 4-19
Foreign material (FM) 4-19
Frost (FR) 4-19
Fusarium damage (FUS DMG) 4-20
Grass green kernels (GRASS GR) 4-20
Green (GR) 4-20
Hail damage (H DMG) 4-21
Hard vitreous kernels (HVK) 4-21
Heat stress (HTS) 4-22

Heated kernels (HTD) 4-22
Immature (IM) 4-23
Insect damage (I DMG) 4-23
Matter other than cereal grains (MOTCG) 4-23
Midge damage and Severe midge damage (MDGE, SEVMDGE) 4-23
Mildew (MIL) 4-24
Mineral matter (MIN MAT) 4-25
Mouldy kernels (MLDY KRNL) 4-25
Natural stain (NSTN) 4-25
Odour (ODOR) 4-25
Other cereal grains (OCG) 4-25
Penetrated smudge (PENT SM) 4-26
Pink kernels (PNK) 4-26
Protein (PROT) 4-26
Rotted kernels (ROT KRNL) 4-26
Ruptured kernels 4-26
Sawfly damage (SFLY DMG) 4-27
Sclerotinia sclerotiorum (SCL) 4-27
Severely damaged kernels 4-27
Severely midge damaged kernels (SEVMDGE) 4-27
Severely mildewed kernels (SEVMIL) 4-27
Severely sprouted kernels (SEVSPTD) 4-27
Shrunken and broken (SHR, BKN) 4-28
Smudge (SM) 4-29
Soft earth pellets (SEP) 4-29
Sprouted and Severely sprouted kernels (SPTD, SEVSPTD) 4-30
Stones (STNS) 4-31
Streak mould 4-33
Superficial discolouration (SUPDISCLR) 4-33
Test weight (TWT) 4-33
Total damage (TDMG) 4-33
Treated seed and other chemical substances 4-33
Wheats of other classes or varieties (WOOC) 4-33

Primary grade determination tables 4-36
Wheat, Canada Western Red Spring (CWRS), standard of quality 4-36
Wheat, Canada Western Red Spring (CWRS), foreign material 4-36
Wheat, Canada Western Red Spring (CWRS), grading factors 4-37
Wheat, Canada Western Hard White Spring (CWHWS), standard of quality 4-38
Wheat, Canada Western Hard White Spring (CWHWS), foreign material 4-38
Wheat, Canada Western Hard White Spring (CWHWS), grading factors 4-39
Wheat, Canada Western Amber Durum (CWAD), standard of quality 4-40
Wheat, Canada Western Amber Durum (CWAD), foreign material 4-40
Wheat, Canada Western Amber Durum (CWAD), grading factors 4-41
Wheat, Canada Western Red Winter (CWRW), standard of quality 4-42
Wheat, Canada Western Red Winter (CWRW), foreign material 4-42
Wheat, Canada Western Red Winter (CWRW), grading factors included in total damage 4-43
Wheat, Canada Western Soft White Spring (CWSWS), standard of quality 4-44
Wheat, Canada Western Soft White Spring (CWSWS), foreign material 4-44
Wheat, Canada Western Soft White Spring (CWSWS), grading factors 4-45
Wheat, Canada Western Extra Strong (CWES), standard of quality 4-46
Wheat, Canada Western Extra Strong (CWES), foreign material 4-46
Wheat, Canada Western Extra Strong (CWES), grading factors 4-47
Wheat, Canada Prairie Spring White (CPSW), standard of quality 4-48
Wheat, Canada Prairie Spring White (CPSW), foreign material 4-48

Wheat, Canada Prairie Spring White (CPSW), grading factors....4-49
Wheat, Canada Prairie Spring Red (CPSR), standard of quality....4-50
Wheat, Canada Prairie Spring Red (CPSR), foreign material....4-50
Wheat, Canada Prairie Spring Red (CPSR), grading factors....4-51
Wheat, Canada Northern Hard Red (CNHR), standard of quality....4-52
Wheat, Canada Northern Hard Red (CNHR), foreign material....4-52
Wheat, Canada Northern Hard Red (CNHR), grading factors....4-53
Wheat, Canada Western Special Purpose (CWSP), standard of quality....4-54
Wheat, Canada Western Special Purpose (CWSP), foreign material....4-54
Wheat, Canada Western Special Purpose (CWSP), grading factors....4-54
Wheat, Canada Eastern Red Spring (CERS), standard of quality....4-55
Wheat, Canada Eastern Red Spring (CERS), foreign material....4-55
Wheat, Canada Eastern Red Spring (CERS), grading factors....4-56
Wheat, Canada Eastern Hard Red Winter (CEHRW), standard of quality....4-57
Wheat, Canada Eastern Hard Red Winter (CEHRW), foreign material....4-57
Wheat, Canada Eastern Hard Red Winter (CEHRW), grading factors....4-58
Wheat, Canada Eastern Soft Red Winter (CESRW), standard of quality....4-59
Wheat, Canada Eastern Soft Red Winter (CESRW), foreign material....4-59
Wheat, Canada Eastern Soft Red Winter (CESRW), grading factors....4-60
Wheat, Canada Eastern Amber Durum (CEAD), standard of quality....4-61
Wheat, Canada Eastern Amber Durum (CEAD), foreign material....4-61
Wheat, Canada Eastern Amber Durum (CEAD), grading factors....4-62
Wheat, Canada Eastern White Winter (CEWW), standard of quality....4-63
Wheat, Canada Eastern White Winter (CEWW), foreign material....4-63
Wheat, Canada Eastern White Winter (CEWW), grading factors....4-64
Wheat, Canada Eastern Other Wheat (CEOW), standard of quality....4-65
Wheat, Canada Eastern Other Wheat (CEOW), foreign material....4-65
Wheat, Canada Eastern Other Wheat (CEOW), grading factors....4-66
Wheat, Canada Eastern Feed (CEFD), standard of quality....4-67
Wheat, Canada Eastern Feed (CEFD), foreign material....4-67
Wheat, Canada Eastern Feed (CEFD), grading factors....4-68

Export shipments....4-69
Commercially clean (CCLN)....4-69
Not commercially clean (NCC)....4-69
Cleaning for grade improvement....4-69
Grading....4-69

Commercially clean determination table....4-70

Export grade determination tables....4-71
Wheat, Canada Western Red Spring (CWRS), standard of quality....4-71
Wheat, Canada Western Red Spring (CWRS), foreign material....4-71
Wheat, Canada Western Red Spring (CWRS), grading factors....4-72
Wheat, Canada Western Hard White Spring (CWHWS), standard of quality....4-73
Wheat, Canada Western Hard White Spring (CWHWS), foreign material....4-73
Wheat, Canada Western Hard White Spring (CWHWS), grading factors....4-74
Wheat, Canada Western Amber Durum (CWAD), standard of quality....4-75
Wheat, Canada Western Amber Durum (CWAD), foreign material....4-75
Wheat, Canada Western Red Winter (CWRW), foreign material....4-77
Wheat, Canada Western Red Winter (CWRW), grading factors included in total damage....4-78
Wheat, Canada Western Soft White Spring (CWSWS), standard of quality....4-79
Wheat, Canada Western Soft White Spring (CWSWS), foreign material....4-79
Wheat, Canada Western Soft White Spring (CWSWS), grading factors....4-80
Wheat, Canada Western Extra Strong (CWES), standard of quality....4-81

Wheat, Canada Western Extra Strong (CWES), foreign material.....4-81
Wheat, Canada Western Extra Strong (CWES), grading factors.....4-82
Wheat, Canada Prairie Spring Red (CPSR), standard of quality.....4-83
Wheat, Canada Prairie Spring Red (CPSR), foreign material.....4-83
Wheat, Canada Prairie Spring Red (CPSR), grading factors.....4-84
Wheat, Canada Prairie Spring White (CPSW), standard of quality 4-85
Wheat, Canada Prairie Spring White (CPSW), foreign material.....4-85
Wheat, Canada Prairie Spring White (CPSW), grading factors.....4-86
Wheat, Canada Northern Hard Red (CNHR), standard of quality 4-87
Wheat, Canada Northern Hard Red (CNHR), foreign material.....4-87
Wheat, Canada Northern Hard Red (CNHR), grading factors.....4-88

Classes and varieties

Classes

Canadian wheat varieties are grouped into classes by their functional characteristics. Canadian wheat classes are categorized as western Canadian or eastern Canadian by the regions in which the varieties are grown.

Canada Eastern Other Wheat

The selection of CEOW wheat varieties is the responsibility of the receiving elevator. Each individual company has their own selection criteria and specifications. All CEOW selected will be graded according to the specifications listed in the Wheat CE Other Wheat primary grade determination table.

In eastern Canada, varieties of wheat that are neither assigned to a class for the region, nor selected as CEOW are eligible for the class Canada Eastern Feed (CEFD).

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Western class name	Variety (from the Regulations)
Canada Western Red Spring	Any variety of the class CWRS designated as such by order of the Canadian Grain Commission
Canada Western Hard White Spring	Any variety of the class CWHWS designated as such by order of the Canadian Grain Commission
Canada Western Amber Durum	Any variety of the class CWAD designated as such by order of the Canadian Grain Commission
Canada Western Red Winter	Any variety of the class CWRW designated as such by order of the Canadian Grain Commission
Canada Western Soft White Spring	Any variety of the class CWSWS designated as such by order of the Canadian Grain Commission
Canada Western Extra Strong	Any variety of the class CWES designated as such by order of the Canadian Grain Commission
Canada Prairie Spring White	Any variety of the class CPSW designated as such by order of the Canadian Grain Commission
Canada Prairie Spring Red	Any variety of the class CPSR designated as such by order of the Canadian Grain Commission
Canada Northern Hard Red	Any variety of the class CNHR designated as such by order of the Canadian Grain Commission
Canada Western Special Purpose	Any variety of the class CWSP designated as such by order of the Canadian Grain Commission

Eastern class name	Variety (from the Regulations)
Canada Eastern Red Spring	Any variety of the class CERS designated as such by order of the Canadian Grain Commission
Canada Eastern Hard Red Winter	Any variety of the class CEHRW designated as such by order of the Canadian Grain Commission
Canada Eastern Soft Red Winter	Any variety of the class CESRW designated as such by order of the Canadian Grain Commission
Canada Eastern Amber Durum	Any variety of the class CEAD designated as such by order of the Canadian Grain Commission
Canada Eastern White Winter	Any variety of the class CEWW designated as such by order of the Canadian Grain Commission
Canada Eastern Other Wheat	Any variety of the class CEOW designated as such by order of the Canadian Grain Commission The selection of CEOW wheat varieties is the responsibility of the receiving elevator. Each individual company has their own selection criteria and specifications. All CEOW selected will be graded according to the specifications listed in the Wheat CE Other Wheat primary grade determination table.
Canada Eastern Feed	Any class or variety of wheat excluding amber durum

Note: Refer to the primary and export grade determination tables for information specific to each grade

Determination of commercially clean

Dockage is not assessed on wheat samples that meet the commercially clean specifications defined in the wheat commercially clean determination table. All samples must be analyzed to determine if they meet commercial cleanliness standards prior to dockage assessment. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.1% of small seeds without hand sieving and weighing the seeds then dockage will be assessed using procedures defined under *Determination of dockage.* Where there is any doubt regarding whether the sample is commercially clean, the sample must be analyzed using the procedures outlined below in steps 1 through 14 to confirm that the sample is not commercially clean prior to assessing dockage.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
2. Place approximately 250 grams of the sample at a time on the No. 5 buckwheat sieve nested over the No. 4.5 round-hole sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. All broken wheat passing through the No. 5 buckwheat hand sieve or the No. 4.5 round hole hand sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for broken through a No. 5 buckwheat sieve. (Column #1 in the wheat commercially clean determination table)
5. Small seeds passing through the No. 4.5 round hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #2 in the wheat commercially clean determination table)
6. Material other than whole or broken grain and small seeds passing through the 4.5 round hole sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for attrition. (Column #3 in the wheat commercially clean determination table)
7. The sample portions remaining on top of the No. 5 buckwheat sieve and the 4.5 round hole sieve are recombined and divided using a Boerner-type divider to a representative portion of not less than 250 grams.
8. The portion divided from step 7 is handpicked to remove large seeds (as defined in the *Glossary),* roughage and wild oats.
9. The roughage material is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for roughage. (Column #4 in the wheat commercially clean determination table)

   Note: If the roughage material contains unthreshed wheat heads, the heads are squeezed to remove the kernels of wheat prior to weighing. The wheat kernel is not included when assessing the concentration of roughage for commercial cleanliness. However, care should be taken to keep these wheat kernels separate. If it is

determined that the sample is "NCC", kernels squeezed from the unthreshed heads will be included in the dockage.

10. The percentages of small seeds, attrition and roughage are added together to determine if the total meets the commercially clean specification of the grade for total small seeds, attrition and roughage. (Column #5 in the wheat commercially clean determination table)
11. The large seeds are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for large seeds. (Column #6 in the wheat commercially clean determination table)
12. The wild oats are weighed and the percentage concentration calculated to determine if they meet the commercially clean specification of the grade for wild oats. (Column #7 in the wheat commercially clean determination table)
13. The percentages of small seeds, large seeds, and wild oats are added together to determine if the total meets the commercially clean specification of the grade for total small seeds, large seeds and wild oats. (Column #8 in the wheat commercially clean determination table)
14. The percentages of small seeds, large seeds, wild oats, roughage and broken grain through the No. 5 buckwheat sieve are added together to determine if the total meets the commercially clean specification of the grade (Column #9 in the wheat commercially clean determination table)

Should the percentage concentration of any of the factors determined in steps 1 through 14 exceed the specifications set out in columns #1 through #9 of the wheat commercially clean determination table the sample will be considered to be not commercially clean.

Dockage will be assessed on samples determined to be not commercially clean using the procedures defined in *Determination of dockage* with the following exception. The exception relates to those samples which are determined, by hand sieving, to be NCC because of the concentration of attritional material either alone (Column #3 in the wheat commercially clean determination table) or as a component of *Total Small Seeds, Attrition and Roughage* (Column #5 in the wheat commercially clean determination table).

The attritional material from these samples will not be reconstituted back into the sample but will be added to the dockage removed by the Carter dockage tester. This procedure will ensure that attritional material that causes a sample to be designated NCC is not expelled by the fan of the Carter dockage tester and is retained in the sample in the event of a reinspection request.

Note: Large seeds, small seeds, roughage and attrition are defined in the *Glossary.*

Export ready (ER)

Export ready refers to carlots which meet the following criteria:

1. The lot must meet the commercially clean specifications for the grade
2. Wheat of other classes and contrasting classes must meet the export specifications for the grade
3. Total foreign material must meet the export specification for the grade.

Not ready for export (NRE)

Not export ready refers to carlots which are commercially clean but do not meet the export specifications for either wheats of other classes, contrasting classes or foreign material.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the gross weight of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures,* using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Wheat, Sample CW/CE/CAN Account Fireburnt
- Wheat, Sample Salvage
- Wheat, Sample Condemned
- Unofficial samples declared as processed

For *Wheat, Sample CW/CE/CAN Account Admixture,* dockage is not reported for removable material similar in nature to the admixture.

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester with the following specifications.

Feed control	# 6
Air control	Minimum # 4 (increase according to the nature of the material)
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 5 buckwheat
Sieve cleaner	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for 2 to 3 seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Handpick whole sound threshed kernels of wheat from the portion passing over the riddle and return them to the cleaned sample.

Composition of dockage

Dockage includes

- Wheat with long sprouts, unthreshed wheat heads, and material other than wheat removed by the No. 25 riddle
- Material removed by No. 5 buckwheat sieve in the lower position
- Material removed by aspiration
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

The purpose of this cleaning is not to remove all foreign material, but rather to reduce the admixture of conspicuous separable material to within the grade tolerance.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to that material. See the table, *Cleaning for grade improvement,* for the list of equipment.
2. Pass the sample through the Carter dockage tester, or sieve the sample by hand, depending on the material.

▲ **Important**: When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

3. Weigh the additional dockage and add it to the original dockage

Cleaning for grade improvement-Wheat

Material to be removed	Equipment	Composition of dockage
Broken kernels	No. 6 buckwheat hand sieve No. 10x10 wire hand sieve	If the weight of broken kernels in the cleaned sample is over the grade tolerance, you can remove up to 5.0% of the gross weight in broken kernels to improve the grade. For example, if a sample of CWRS contains 12% broken kernels by gross weight, you can remove enough broken kernels to bring the percentage to 7%, which brings the sample within the grade tolerance for No. 3 CWRS. Add the maximum 5% broken kernels to dockage. See *Shrunken and broken.*
Bunt balls	Carter dockage tester, using the setup for *Normal cleaning procedures,* but with air control at a maximum setting of 7	If there is no odour, remove bunt balls and add to dockage. If there is an odour, bunt is a grading factor. See *Common bunt.*
All foreign material (other than stones and wild oats)	No. 6 buckwheat hand sieve No. 10x10 wire hand sieve	Add material to dockage, if the grade is improved as a result.
Stones	No. 6 buckwheat hand sieve	If the weight of stones and other material removed is • 5.0% or less of the gross weight, assess as dockage. • More than 5.0% of the gross weight, see *Stones* in Grading factors, or the relevant grade determination table.
Wild oats	Carter dockage tester, using the setup for *Normal cleaning procedures,* but with No. 1 riddle No. 10x10 wire hand sieve	Everything removed is dockage.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of wheat.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Wheat, No. l Canada Western Red Spring
   4. 0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in sample

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as "any pesticide, desiccant or inoculant".

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary or export grade determination tables.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List and
see *Frost* and *Mildew* definitions in this chapter for applicable standards for each class.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of wheat for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Artificial stain	250 g	working sample
Binburnt kernels	250 g	working sample
Blackpoint	25 g	50 g
Common bunt	50 g	100 g
Contrasting Classes	50 g	100 g
Darkened kernels	50 g	100 g
Dark immature kernels	50 g	100 g
Degermed kernels	25 g	50 g
Ergot	500 g	working sample
Excreta	working sample	working sample

Representative portion of wheat for grading (in grams) (cont'd)

Grading factor	Sample portion size range	
	Minimum	Maximum
Fertilizer Pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign Material	50 g	250 g
Fusarium damage	10 g	100 g
Grass green kernels	50 g	250 g
Hard vitreous kernels, sieving	250 g	250 g
Hard vitreous kernels, handpick	10 g	25 g
Heated	25 g	250 g
Insect damage	50 g	100 g
Matter other than cereal grains	50 g	250 g
Mouldy	100 g	working sample
Natural stain	50 g	100 g
Odour	working sample	working sample
Other cereal grains	50 g	250 g
Other cereal grains and other matter	50 g	250 g
Penetrated smudge	50 g	250 g
Pink kernels	50 g	250 g
Rotted	100 g	working sample
Sawfly, midge damage	10 g	50 g
Sclerotinia	500 g	working sample
Severe midge damage	50 g	100 g
Severely mildewed	100 g	working sample
Severely sprouted	50 g	100 g
Shrunken and broken	250 g	250 g
Smudge	50 g	100 g
Soft earth pellets	working sample	working sample
Sprouted kernels	10 g	100 g
Stones	working sample	working sample
Total Damage	25 g	100 g
Treated Seed	working sample	working sample
Wheats of other classes or varieties	15 g	50 g

Grading factors

Images available on web version

Artificial stain (ART STND)

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Artificial stain

- Includes any nontoxic stain on kernels caused by contact with foreign substances such as dye, oil, grease, paint, or soot
- Does not include any stain considered a natural stain
- Does not include any stain caused by coming into contact with poisonous substances, or any stain that could be considered *Contaminated grain*

▲ **Important** If you are uncertain about the identity of the stain, treat the sample as *Contaminated grain.*

Binburnt kernels (BBT)

Binburnt kernels are blackened as a result of severe heating in storage. A cross section of a binburnt kernel maintains its dense structure and appears smooth and glossy. A binburnt kernel is similar in weight to sound kernel.
There is a single tolerance for the total of binburnt, severely mildewed, mouldy, and rotted kernels.

Procedures

- Determine the weight of binburnt kernels as a percentage of the net weight of the sample.

Blackpoint (BLK PT)

Kernels with blackpoint have a distinct dark brown or black discolouration of the whole germ and surrounding area.

Procedures

- Disregard a slight discolouration restricted to the germ.
- When the discolouration affects more than one-half of the kernel or extends into the crease, it is considered smudge.

Broken (BKN)

Broken kernels are pieces of wheat that are less than three-quarters of a whole kernel. If the piece is more than three-quarters of a kernel, it is considered whole.
See *Shrunken and broken*

Common bunt (stinking smut) (SMUT)

Common bunt is a plant disease caused by fungi, characterized by

- Soft black bunt balls
- Kernels tagged with black bunt spores
- A distinct smutty odour, or the smell of rotten fish

Procedures

See procedures for *Cleaning for grade improvement.*

- If samples have a distinct odour, grade *Wheat Sample CW/CE/CAN Account Odour.*
- If kernels are tagged with bunt spores but there is no smutty odour, the sample is *Naturally stained* and graded accordingly.
- Non-removable bunt balls are considered as *Matter other than cereal grains*.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Wheat, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Wheat, Sample Condemned*.

Contrasting classes (CON CL)

See *Wheats of other classes or varieties (WOOC)*

Darkened kernels (amber durum)

Darkened kernels have a discolouration that penetrates and extends throughout the endosperm. They are similar in appearance to penetrated smudge with the exception that the discolouration is gray to charcoal in colour rather than red to dark brown.

For grading purposes, darkened kernels should be considered as, and in conjunction with severe midge damage.

Note: Cutting of kernels is permitted

Dark immature kernels (DKIM)

Dark immature kernels are also called swath-heated kernels. They are similar to heated kernels, but they do not exhibit the reddish discolouration associated with heated kernels, and they do not have a heated odour.

- Are considered as damage for grading purposes in CWRW

Degermed kernels (DGM)

The germ has been removed through the mechanical handling process or by insect attack. Degermed kernels lack the greyish discolouration that is often present with sprouted kernels.

- Are considered as damage for grading purposes in CWRW.

See *Insect damage*
See *Sprouted and Severely sprouted kernels*

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease which produces elongated fungus bodies with a purplish black exterior, a purplish white to off-white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Wheat, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Wheat, Sample Condemned*.

Fireburnt kernels (FBNT)

Fireburnt kernels are charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes which crumble easily under pressure.

Foreign material (FM)

Foreign material is anything that is not wheat that remains in the sample after the removal of dockage.

Frost (FR)

Frost refers to wheat kernels with blistered brans as a result of exposure to freezing temperatures. The degree of blistering ranges from fine to coarse and is dependent upon the maturity of the grain, the temperature to which the grain was exposed and the duration of the exposure. Samples containing kernels affected by Frost are graded according to the degree of soundness definition as reflected in the standard for each grade. Standards are not available for all classes of wheat; refer to the table below to determine the applicable standard for a sample class.

Frost Standards				
Grade / Class	**Applicable Standard**		**Grade / Class**	**Applicable Standard**
No.1 CWRS	2021 No.1 CWRS		No.1 CWSWS	2021 No.1 CWRS
No.2 CWRS	2021 No.2 CWRS		No.2 CWSWS	2021 No.2 CWRS
No.3 CWRS	2021 No.3 CWRS		No.3 CWSWS	2021 No.3 CWRS
No.1 CWHWS	2021 No.1 CWRS		No.1 CWES	2021 No.2 CWRS
No.2 CWHWS	2021 No.2 CWRS		No.2 CWES	2021 No.3 CWRS
No.3 CWHWS	2021 No.3 CWRS		No.1 CPSW	2021 No.2 CWRS
No.1 CWAD	2021 No.1 CWAD		No.2 CPSW	2021 No.3 CWRS
No.2 CWAD	2021 No.2 CWAD		No.1 CPSR	2021 No.2 CWRS
No.3 CWAD	2021 No.3 CWAD		No.2 CPSR	2021 No.3 CWRS
No.4 CWAD	2021 No.4 CWAD		No.1 CNHR	2021 No.1 CWRS
No.1 CWRW	N/A		No.2 CNHR	2021 No.2 CWRS
No.2 CWRW	N/A		No.3 CNHR	2021 No.3 CWRS
No.3 CWRW	N/A			

Fusarium damage (FUS DMG)

Fusarium-damaged wheat is typically characterized by thin or shrunken chalk-like kernels. Fusarium-damaged kernels have a white or pinkish mould or fibrous growth.

Procedures

1. Using a Boerner-type divider, divide the representative portion.
2. Separate all kernels showing any evidence of fusarium damage, including any kernels that have a chalk-like appearance.
3. You may examine kernels using a 10-power magnifying lens to confirm evidence of a white or pinkish mould or fibrous growth. In determining fusarium damage, select only kernels with this white or pinkish mould or fibrous growth.

Grass green kernels (GRASS GR)

Grass-green kernels are a distinct vivid green throughout because of immaturity.

- Are considered as damage for grading purposes in CWRW

Green (GR)

Green wheat kernels may range from fully developed to shrunken and distorted with various degrees of darkening that are in contrast to the natural sound colour.
The maturation process has been affected or arrested by the environment or an agronomic practice resulting in a variation in colour, size and shape. The physical effect is dependent on the timing and extent of the exposure to the contributing factors.

Dark immature, *Grass green and Immature* are separate grading factors that should not be confused with *Green* damaged kernels.

Samples containing *Green* kernels are graded according to the degree of soundness definition as reflected in the standard or guide samples for each grade.

Hail damage (H DMG)

Hail damage is visually similar to sawfly damage. Hail damaged kernels are considered as Sawfly damage for grading purposes.
See *Sawfly damage.*

Hard vitreous kernels (HVK)

Vitreousness is the natural translucence of a kernel that is a visible sign of kernel hardness. Hard vitreous kernels (HVK) are a grade determinant for the amber durum wheat class in Canada and the red spring wheat class in western Canada.

Red Spring – Western Canada

Note: Cutting of kernels is not permitted

Non-vitreous material includes
- Contrasting classes of wheat
- Foreign material
- Kernels that are sprouted, binburnt, severely mildewed, rotted, mouldy, heated, fireburnt, penetrated smudge, chalky white fusarium damaged, grass green, severely frost damaged or midge damaged
- Whole and pieces of kernels having a defined starch area of at least half the surface area of the kernel or piece of kernel that clearly contrasts with the translucent colour of a vitreous kernel

Amber Durum

Note: Cutting of kernels is permitted

Non-vitreous material includes:
- Wheats of other classes
- Foreign material
- Kernels that are sprouted, binburnt, severely mildewed, rotted, mouldy, heated, fireburnt, penetrated smudge, chalky white fusarium damaged, grass green, severely frost damaged or midge damaged including severe midge damaged
- Kernels having an externally visible starch area of any size
- Kernels having internal starch areas that require cutting of the kernels. Opaque and bleached kernels may require cutting to determine if there are starchy areas within the kernel.
- When evaluating the face of the cross-section, the following will be excluded from non-vitreous:
  - The cut has resulted in a flaking of the endosperm
  - The face of the cross cut kernel has a minute starch area roughly the size of a pencil point typically at the trough of the cheeks
  - The face of the cross cut kernel appears cloudy overall but with no dense white starch area

Procedures

1. Using a Boerner-type divider, divide a representative portion of 250 g from the cleaned sample.
2. Sieve the representative portion mechanically, using the Carter dockage tester or manually using the No. 4.5 slotted sieve.

Feed control	#6
Air control	Off
Riddle	None
Top sieve	No. 4.5 slotted sieve
Centre sieve	Blank tray
Bottom sieve	None
Sieve cleaner	Off

Manual method

Sift the approximately 250 g clean sub-sample over the No. 4.5 slotted hand sieve. Sifting shall consist of 25 complete motions of about 20 cm total distance.

3. From the material that remains on top of the sieve or lodged in the sieve, divide a portion of 15 g, or 25 g for export shipments.

   Material that passes through the sieve is not used in the determination of HVK.

4. Separate vitreous and non-vitreous kernels from the 15-g portion.
5. For amber durum only: Cut and examine the endosperm of suspect kernels to determine if they are vitreous.

Heat stress (HTS)

Heat stress refers to wheat kernels with blistered brans as a result of exposure to prolonged hot weather conditions. The degree of blistering ranges from fine to moderate and is dependent upon the maturity of the grain, the temperature to which the grain is exposed and the duration of the exposure. Heat stressed kernels may be visually indistinguishable from Frost affected kernels, but rarely exhibit severe blistering or distortion. Samples containing kernels affected by Heat stress are graded according to the degree of soundness definition and the Frost standard for each grade.
See *Frost*

Heated kernels (HTD)

Heated kernels have the colour and may have the odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. They range from orange-red to very dark brown, but are not black.
Heated seeds of other grains are included in the tolerance for *Heated.*

Note: Tolerance for total Heated includes heated, binburnt, severely mildewed, rotted, and mouldy kernels

Immature (IM)

Immature wheat kernels are not fully ripened. The kernels may be fully developed with various shades of green that are in contrast to the natural sound colour.
The kernel development has been arrested during the maturation process often resulting in variation in colour, size and shape.
Dark immature and *Grass green* are separate grading factors that should not be confused with *Immature* kernels.
Samples containing *Immature* kernels are graded according to the degree of soundness definition as reflected in the standard for each grade.

Insect damage (I DMG) 📷

Insect damaged kernels have been bored or chewed by insects resulting in a portion of the endosperm being removed. Insect damage is characterized by chew and bite marks or by small holes drilled into the sides or germ area of the kernel. Damage can be caused by field insects such as grasshoppers or armyworms, as well as stored grain pests such as the Indian meal moth, red flour beetle or the lesser grain borer.

Midge damaged kernels are not considered insect damaged and are assessed separately. *See Midge Damage*

Surface damage, where only small portions of the bran have been removed, should not be considered damaged but should be considered in the degree of soundness

- Are considered as damage for grading purposes in CWRW

Matter other than cereal grains (MOTCG)

Matter other than cereal grains is

- Inseparable seeds such as ragweed, Tartary buckwheat, rye grass, and wild oats
- Non-cereal domestic grains such as canola, flaxseed, corn, peas, buckwheat and lentils that remain in the cleaned sample

Note: Once the sample is determined to be commercially clean, assessing MOTCG is not necessary unless requested. If sample is not commercially clean, MOTCG should only be assessed after cleaning. *See Normal Cleaning Procedures*.

Midge damage and Severe midge damage (MDGE, SEVMDGE) 📷

Midge damage (MDGE)

Midge damage is caused by the Orange Blossom Wheat Midge. The only part of the plant damaged is the developing seed. When a kernel of grain is attacked either it will not develop or it will develop as a shrivelled, deformed kernel.

For grading purposes, midge damaged kernels must have at least two of the following characteristics:

- a rupture of the bran on either the back or side of the kernel
- a distinct white line or mark, located on the back or side of the kernel
- the kernel is distinctly distorted

Severe midge damage (SEVMDGE)

Midge damaged kernels that have a blackened streak extending more than one quarter the length of the kernel are assessed as severely midge damaged kernels. This discolouration is the result of a fungal infection. Midge damaged kernels that are blackened less than one quarter the length of the kernel or have only grey discolouration, of any amount, are not assessed as severely midge damaged kernels. Severe midge damage is determined for CWAD only.

The tolerance for sawfly damage and midge damage is combined. The damaged kernels are weighed together and a percentage determined. This percentage is then compared to the grade determination table to assign the appropriate grade.

Mildew (MIL)

Mildew kernels are kernels affected by field fungi that develop under conditions of excessive moisture affecting unthreshed kernels of wheat. Samples affected by mildew have an overall greyish discolouration with grey to black mildew spores typically attached to the brush end of the kernel.
Samples containing kernels affected by mildew are graded according to the degree of soundness definition as reflected in the standard for each grade. Standards are not available for all classes of wheat; refer to the table below to determine the applicable standard for a sample class.

See *Severely mildewed* for heavily affected samples

Note: For most classes of wheat, samples will be graded no lower than No. 3 on account of mildew. For CPSR, CPSW and CWES, samples will be graded no lower than No. 2 on account of mildew. For CWAD, samples will be graded no lower than No. 4 on account of mildew.

Mildew Standards				
Grade / Class	**Applicable Standard**		**Grade / Class**	**Applicable Standard**
No.1 CWRS	2025 No.1 CWRS		No.1 CPSW	2025 No.2 CWRS
No.2 CWRS	2025 No.2 CWRS		No.2 CPSW	N/A
No.3 CWRS	N/A		No.1 CPSR	2025 No.2 CWRS
No.1 CWHWS	2025 No.1 CWRS		No.2 CPSR	N/A
No.2 CWHWS	2025 No.2 CWRS		No.1 CNHR	2025 No.1 CWRS
No.3 CWHWS	N/A		No.2 CNHR	2025 No.2 CWRS
No.1 CWAD	2025 No.1 CWAD		No.3 CNHR	N/A
No.2 CWAD	2025 No.2 CWAD		No.1 CERS	2025 No.1 CERS
No.3 CWAD	2025 No.3 CWAD		No.2 CERS	2025 No.2 CERS
No.4 CWAD	N/A		No.3 CERS	N/A
No.1 CWRW	2025 No.1 CWRS		No.1 CEHRW	2025 No.1 CESRW
No.2 CWRW	2025 No.2 CWRS		No.2 CEHRW	2025 No.2 CESRW
No.3 CWRW	N/A		No.3 CEHRW	N/A
No.1 CWSWS	2025 No.1 CWRS		No.1 CESRW	2025 No.1 CESRW
No.2 CWSWS	2025 No.2 CWRS		No.2 CESRW	2025 No.2 CESRW
No.3 CWSWS	N/A		No.3 CESRW	N/A
No.1 CWES	2025 No.2 CWRS		No.1 CEWW	2025 No.1 CEWW
No.2 CWES	N/A		No.2 CEWW	2025 No.2 CEWW
			No.3 CEWW	N/A

Mineral matter (MIN MAT)

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

Mouldy kernels (MLDY KRNL)

Mouldy kernels are discoloured, swollen and soft as a result of decomposition by fungi or bacteria. They have mould visible to the naked eye and may feel spongy under pressure.

There is a single tolerance for the total of binburnt, severely mildewed, mouldy, and rotted kernels.

Procedures

- Determine the weight of mouldy kernels as a percentage of the net weight of the sample.

Natural stain (NSTN)

Naturally stained kernels are caused by contact with natural substances such as bunt spores, soil or weeds. Consideration is given to the incidence of affected kernels and the nature and severity of the stain. Kernels that are lightly stained should not be considered.

When the nature of the material is in doubt, the sample is sent to the Chief Grain Inspector for review, and, if necessary, for laboratory analysis.

See Glossary, *weed stain*

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour—such as fuel oil, skunk or urea
- The presence of visible residue causing the odour

If odour is the grade determinant and there is…	Then the grade is…
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Wheat, Sample CW/CE/CAN Account Odour*
A distinct heated odour	*Wheat, Sample CW/CE/CAN Account Heated*
A distinct fireburnt odour	*Wheat, Sample CW/CE/CAN Account Fireburnt*

Other cereal grains (OCG)

Other cereal grains in wheat are rye, barley, triticale, oats, oat groats, and wild oat groats that remain in the cleaned sample. Other cereal grains are treated as total foreign material. For grading purposes, spelt and Kamut® are considered as *Other cereal grains* in samples of wheat.

Penetrated smudge (PENT SM)

With penetrated smudge, the discolouration penetrates and extends throughout the endosperm, usually as a result of a more severe infection.
Note: Cutting of kernels is permitted

Pink kernels (PNK)

Pink pigment in wheat kernels is an indication of immaturity. Pink kernels

- Are shrunken
- Display a pink discolouration
- Are considered as damage for grading purposes in CWRW

▲ **Important:** Do not confuse pink kernels with fusarium-damaged kernels, pesticide treated seed or other contaminated grains.

Protein (PROT)

The classes of CWRS, CWHWS, CWAD, CNHR, CWES and CWRW wheat have minimum protein levels established for No. 1 grades. Protein content is reported on a 13.5% moisture basis.

See *Primary grade determination tables*.

Rotted kernels (ROT KRNL)

Rotted kernels are discoloured, swollen and soft as a result of decomposition by fungi or bacteria. They may feel spongy under pressure.

There is a single tolerance for the total of binburnt, severely mildewed, mouldy, and rotted kernels.

Procedures

- Determine the weight of rotted kernels as a percentage of the net weight of the sample.

Ruptured kernels

Kernels are considered to be ruptured when the split in the cheek extends at least half the length of the cheek or if both cheeks are split to any degree. Ruptured kernels do not require magnification to be identified.

Ruptured kernels are considered as severely damaged and are assessed using the degree of soundness definition in the grading table.

Sawfly damage (SFLY DMG)

Kernels with sawfly damage are shrivelled or distorted as a result of the sawfly insect attacking the stem of the plant hence stopping the flow of nutrients to the kernel.

The tolerance for sawfly damage and midge damage is combined. The damaged kernels are weighed together and a percentage determined. This percentage is then compared to the grade determination table to assign the appropriate grade.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Severely damaged kernels

Kernels are considered to be severely damaged when

- the kernel is severely shriveled or distorted due to weather, insect, fungal and/or other reason
- in wheat, the cheeks and/or back of the kernel are ruptured

Severely midge damaged kernels (SEVMDGE)

See *Midge damage and Severe midge damage*

Severely mildewed kernels (SEVMIL)

In severely mildewed wheat, mildew spores have severely blackened the kernel inside and out. The kernels may feel spongy under pressure.

There is a single tolerance for the total of binburnt, severely mildewed, mouldy, and rotted kernels.

Procedures

- Determine the weight of severely mildewed kernels as a percentage of the net weight of the sample.

Severely sprouted kernels (SEVSPTD)

See *Sprouted and Severely sprouted kernels*

Shrunken and broken (SHR, BKN)

Percentages of shrunken and broken kernels are determined from the same representative portion.

Shrunken kernels (SHR)

Shrunken kernels are whole kernels of wheat that pass through a No. 4.5 slotted handheld sieve.

Broken kernels (BKN)

Broken kernels are pieces of wheat that are less than three-quarters of a whole kernel. If the piece is more than three-quarters of a kernel, it is considered whole.

Determine the percentage of shrunken kernels

1. Using a Boerner-type divider, divide a representative portion of approximately 250 g from the sample.
2. Sieve the approximately 250 g clean sub-sample over the No. 4.5 slotted handheld sieve, ensuring the slotted perforations are parallel with the sieving motion. In a steady motion, move the sieve from left to right 30 times. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
3. Separate the shrunken and broken kernels which pass through the sieve and calculate a percentage for each.

Determine the percentage of broken kernels

4. Using a Boerner-type divider, divide the material that remains on top of the sieve or lodged in the sieve from Step 2 into a representative portion of approximately 50 g.
5. Handpick broken kernels from the 50-g portion and calculate the percentage.
6. Add this percentage to the percentage of handpicked kernels from Step 3 to determine Total Broken.

Smudge (SM)

Smudge is a discolouration on the kernel as a result of infection by some common field fungi. The discolouration may be brown, black or red.

Classes of wheat other than amber durum

The discolouration is considered as smudge in wheat classes other than amber durum if more than one-half of the kernel is discoloured, or if the discolouration extends into the crease. Less extensive discolouration is considered blackpoint.

Amber durum

The discolouration is assessed as smudge in amber durum if:

1. More than one-half the kernel is discoloured, or
2. Discolouration of the crease
   - Has spread onto the cheeks of the kernel regardless of any discolouration of the germ
   - Appears as a thin line extending more than half the length of the crease, in combination with any discolouration of the germ.

Note: kernels that have a thin line of discolouration of any length in the crease, but have no discolouration of the germ, are not assessed as smudge.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only— if they do not crumble, they are considered *Stones.*
- Any nontoxic material of similar consistency.

Procedures

1. Handpick soft earth pellets from the clean sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Wheat, Sample Account Admixture.*

Sprouted and Severely sprouted kernels (SPTD, SEVSPTD)

Sprouted kernels (SPTD)

Kernels are assessed as sprouted if one of the following conditions exists:

- Kernels show clear evidence of growth in the germ area, including kernels where the bran is noticeably split over the germ area along with clear evidence of growth.
- The sprout is broken or completely gone and only a portion remains. There is no clear evidence that the sprout extended beyond the normal contour of the germ nor any evidence of kernel degeneration.
- The germ is missing along with discolouration and deterioration of the kernel from weathering.

Note: For kernels with missing germs that are not discoloured and deteriorated from weathering see *Degermed*

Severely sprouted kernels (SEVSPTD)

Kernels are assessed as severely sprouted if one of the following conditions exists:

- The sprout extends beyond the normal contour of the germ
- The kernels are severely degenerated as an apparent result of advanced sprouting
- The sprout is broken or completely gone and there is evidence showing that there was extension of the sprout outside the normal contour of the germ

Note: A slight tear in the bran above the contour of the germ is not on its own clear evidence that the sprout extended outside the normal contour of the germ

Total sprouted is a combination of severely sprouted and sprouted kernels

Procedures

1. Using a Boerner-type divider, divide a representative portion.
2. Separate all kernels showing any evidence of sprouting.
3. You may use a 10-power magnifying lens to confirm sprouting activity.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

Note: Stones may be removed and included in dockage if the material removed is 5% or less of the gross weight of the sample. See *Cleaning for grade improvement*.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Wheat*, *Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation, up to 2.5%, are graded *Wheat, Sample Canada Eastern Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Wheat, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Wheat, Canada Western Red Spring

Grade name	Stones %
No. 1 CWRS	0.03
No. 2 CWRS	0.03
No. 3 CWRS	0.06
CW Feed	0.10

Basic grade:..... *Wheat, No. 3 CWRS*
Reason for basic grade:..... Mildew

If the above sample contained	Grade in Western Canada
0.08% stones	*Wheat, Rejected No. 3 CWRS Account Stones*
1.0% stones	*Wheat, Rejected No. 3 CWRS Account Stones*
3.0% stones	*Wheat, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Wheat, Canada Eastern Red Spring

Grade name	Stones %
No. 1 CERS	0.03
No. 2 CERS	0.03
No. 3 CERS	0.06
No. 4 CERS	0.10

Basic grade:..... *Wheat, No. 3 CERS*
Reason for basic grade:..... Mildew

If the above sample contained	Grade in Eastern Canada
0.08% stones	*Wheat, No. 4 CERS*
1.0% stones	*Wheat, Sample CE Account Stones*
3.0% stones	*Wheat, Sample Salvage*

Streak mould

Kernels with unusual dark grey streaks on their sides toward the brush may indicate streak mould. This very slow-growing mould is harmless in wheat, but it affects kernel appearance. It occurs most commonly in red winter wheat. It is not related to the more serious storage moulds.

Procedures

For grading, include streak mould with blackpoint.

Superficial discolouration (SUPDISCLR)

Superficial discolouration is a reddish discolouration not penetrating the endosperm. This factor is evaluated subjectively in relation to the degree of soundness without reference to specific tolerances.

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Total damage (TDMG)

Includes kernels that are dark immature, degermed, fireburnt, fusarium damaged, grass green, heated, insect damaged, pink, sawfly/midge damaged, smudge damaged, sprouted or damaged in any other way.

Note: Total damage only applies as a grading factor to the class Canada Western Red Winter (CWRW)

Treated seed and other chemical substances

See *Contaminated grain*

Wheats of other classes or varieties (WOOC)

- Other classes of wheat are all classes of wheat, including non-registered varieties, other than the predominant class in the sample.

  Contrasting classes are classes of different colour wheat; for example, CWAD is a contrasting class in CWRS.

  Note: The wheat class CWHWS is considered a WOOC for grading purposes in samples of CWRS.
- Other varieties of wheat are any registered varieties.

Working tolerance for wheats of other classes that blend

When assessing wheats of other classes that blend, up to 0.9% in excess of the grade specification is considered a working tolerance and disregarded.
For example, for No. 2 CWRS the primary grade tolerance is 4.5%. Samples containing up to 5.4% will still be considered within tolerance.

Note: This working tolerance only applies to registered varieties that qualify for the milling grades of wheat.

Assessment of wheats of other classes in CW Feed and sample grades

When assessing wheats of other classes, samples containing wheats of other classes beyond the lowest numerical grade tolerances and up to 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP will be graded *Wheat, CW Feed.*

When assessing wheats of other classes in samples containing over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP will be graded *Wheat, Sample CW Account Admixture.*

Samples containing up to 49% of wheats of other classes other than CWAD or any variety of the class CWSP will be graded *Wheat, CW Feed.*

Examples
3 CWRS WOOC primary grade tolerance: 7.5%

Example 1

A sample contains 10% CWAD and 90% CWRS. The sample will be graded *Wheat, CW Feed.*

A sample contains 15% CWAD and 85% CWRS. The sample will be graded *Wheat, Sample CW Account Admixture.*

Example 2

A sample contains 49% CPSR and 51% CWRS will be graded *Wheat, CW Feed*.

Predominant class		Wheats of other classes													
	CWRS	**CWHWS**	**CWAD**	**CWRW**	**CWSWS**	**CWES**	**CWSP**	**CPSW**	**CPSR**	**CNHR**	**CEAD**	**CERS, CEHRW, CESRW**	**CEWW**	**CEOW**	**CEFD**
CWRS	–	WOOC	CC	WOOC *	CC	WOOC *	**	CC	WOOC *	WOOC*	CC	WOOC *	CC	**	**
CWHWS	CC	–	CC	CC	WOOC	CC	**	WOOC	CC	CC	CC	CC	WOOC	**	**
CWAD	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC
CWRW	WOOC *	CC	CC	–	CC	WOOC *	**	CC	WOOC *	WOOC*	CC	WOOC *	CC	**	**
CWSWS	WOOC	WOOC	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC
CWES	WOOC *	CC	CC	WOOC *	CC	–	**	CC	WOOC *	WOOC*	CC	WOOC *	CC	**	**
CWSP	-	-	-	-	-	-	-	-	-	-	-	WOOC	-	-	-
CPSW	CC	WOOC	CC	CC	WOOC	CC	**	–	CC	CC	CC	CC	WOOC	**	**
CPSR	WOOC *	CC	CC	WOOC *	CC	WOOC *	**	CC	–	WOOC*	CC	WOOC *	CC	**	**
CNHR	WOOC*	WOOC	CC	WOOC*	CC	WOOC*	**	CC	WOOC*	--	CC	WOOC*	CC	**	**
CERS	–	WOOC	CC	–	CC	–	***	CC	–	–	CC	-	CC	***	***
CEHRW	–	CC	CC	–	CC	–	***	CC	–	–	CC	-	CC	***	***
CESRW	–	CC	CC	–	CC	–	***	CC	–	–	CC	-	CC	***	***
CEAD	WOOC	WOOC	-	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC
CEWW	CC	WOOC	CC	CC	WOOC	CC	**	WOOC	CC	CC	CC	CC	–	**	**
CEOW	-	-	-	-	–	-	-	-	-	-	-	-	-	–	-
CEFD	***	–	***	***	***	***	***	***	***	***	***	***-	***	***	–

WOOC Wheats of other classes
CC Contrasting classes
(*) See Working tolerance for wheats of other classes that blend
(**) Consider as WOOC if the same colour, consider as CC if a different colour
(***) No WOOC tolerance, consider as CC if a different colour

Primary grade determination tables

Wheat, Canada Western Red Spring (CWRS), standard of quality

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	72 (350)	69 (335)	65 (315)	Wheat, Sample CW Account Light Weight
Minimum hard vitreous kernels %	65	No minimum	No minimum	No minimum	
Minimum protein %	10.0	No minimum	No minimum	No minimum	
Variety	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and CWSP	

Note: Samples of CWRS will be graded no lower than No. 3 CWRS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Red Spring (CWRS), foreign material

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Ergot
Excreta %	0.01	0.01	0.01	0.03	Wheat, Sample CW Account Excreta
Matter other than cereal grains %	0.2	0.3	0.5	1.0	Wheat, Sample CW Account Admixture
Sclerotinia %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Admixture
Stones %	0.03	0.03	0.06	0.10	2.5% or less - Wheat, Rejected grade, Account Stones, Over 2.5% - Wheat, Sample Salvage
Total % Foreign material	0.6	1.2	2.4	10.0	See Mixed grain

Wheat, Canada Western Red Spring (CWRS), grading factors

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed	Grade, if specs for CW Feed not met
Artificial stain, no residue %	0.0	0.1	0.1	2.0	Wheat, Sample CW Account Stained Kernels
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.02	0.03	2.50	Wheat, Sample CW Account Heated
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.4	1.0	2.5	Wheat, Sample CW Account Heated
Contrasting classes %	0.8	2.3	3.8	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP - Wheat, Sample CW Account Admixture
Total % Wheats of other classes or varieties and contrasting classes **	2.3	4.5	7.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP - Wheat, Sample CW Account Admixture
Dark immature %	1	3	10	No limit	
Degermed %	4	7	13	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	Wheat, Sample CW Account Fireburnt
Fusarium damage %	0.3	0.8	1.5	4.0	Wheat, Sample CW Account Fusarium Damage Over 10%- Wheat, Commercial Salvage
Grass green %	0.8	2.0	10.0	No limit	
Insect damage %	1	3	6	No limit	
Natural stain %	1	2	5	No limit	
Pink %	2	5	10	No limit	
Sawfly, midge %	2	5	10	No limit	
Shrunken %	4	4	4	No limit	
Broken %	5	6	7	13	Sample Broken Grain
Total % Shrunken and broken	7	8	9	No limit within broken tolerances	
Smudge %	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Severely sprouted %	0.1	0.2	0.3	No limit	
Total % Sprouted	0.5	1.0	3.0	No limit	

(**) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Western Hard White Spring (CWHWS), standard of quality

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	75 (365)	72 (350)	65 (315)	Wheat, Sample CW Account Light Weight
Minimum protein %	10.0	No minimum	No minimum	No minimum	
Variety	Any variety of the class CWHWS designated as such by order of the Commission	Any variety of the class CWHWS designated as such by order of the Commission	Any variety of the class CWHWS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and CWSP	

Note: Samples of CWHWS will be graded no lower than No. 3 CWHWS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Hard White Spring (CWHWS), foreign material

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Ergot
Excreta %	0.01	0.01	0.01	0.03	Wheat, Sample CW Account Excreta
Matter other than cereal grains %	0.2	0.3	0.5	1.0	Wheat, Sample CW Account Admixture
Sclerotinia %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Admixture
Stones %	0.03	0.03	0.06	0.10	2.5% or less - Wheat, Rejected grade, Account Stones Over 2.5% - Wheat, Sample Salvage
Total % Foreign material	0.6	1.2	2.4	10.0	See Mixed grain

Wheat, Canada Western Hard White Spring (CWHWS), grading factors

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed	Grade, if specs for CW Feed not met
Artificial stain, no residue %	0.0	0.1	0.1	2.0	Wheat, Sample CW Account Stained Kernels
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.02	0.03	2.50	Wheat, Sample CW Account Heated
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.4	1.0	2.5	Wheat, Sample CW Account Heated
Contrasting classes %	3.0	3.0	5.0	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP - Wheat, Sample CW Account Admixture
Total % Wheats of other classes or varieties and contrasting classes	3	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP - Wheat, Sample CW Account Admixture
Dark immature %	1	3	10	No limit	
Degermed %	4	7	13	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	Wheat, Sample CW Account Fireburnt
Fusarium damage %	0.3	0.8	1.5	4.0	Wheat, Sample CW Account Fusarium Damage Over 10%- Wheat, Commercial Salvage
Grass green %	0.8	2.0	10.0	No limit	
Insect damage %	1	3	6	No limit	
Natural stain %	1	2	5	No limit	
Pink %	2	5	10	No limit	
Sawfly, midge %	2	5	10	No limit	
Shrunken %	4	4	4	No limit	
Broken %	5	6	7	13	Sample Broken Grain
Total % Shrunken and broken	7	8	9	No limit within broken tolerances	
Smudge %	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Severely sprouted %	0.1	0.2	0.3	No limit	
Total % Sprouted	0.5	1.0	3.0	No limit	

Wheat, Canada Western Amber Durum (CWAD), standard of quality

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD	Grade, if No. 5 specs not met
Degree of soundness *	Reasonably well matured, reasonably free from damaged kernels	Reasonably well matured, reasonably free from severely damaged kernels	Fairly well matured, may be moderately weather-damaged or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	79 (387)	77 (377)	74 (362)	71 (347)	65 (318)	Wheat, Sample CW Account Light Weight
Minimum hard vitreous kernels %	80	60	40	No minimum	No minimum	
Minimum protein %	9.5	No minimum	No minimum	No minimum	No minimum	
Variety	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of amber durum wheat	

Note: Samples of CWAD will be graded no lower than No. 4 CWAD on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Amber Durum (CWAD), foreign material

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD	Grade, if No. 5 specs not met
Ergot %	0.02	0.02	0.04	0.04	0.10	Wheat, Sample CW Account Ergot
Excreta %	0.01	0.01	0.01	0.01	0.03	Wheat, Sample CW Account Excreta
Matter other than cereal grains %	0.2	0.3	0.5	0.5	1.0	Wheat, Sample CW Account Admixture
Sclerotinia %	0.02	0.02	0.04	0.04	0.10	Wheat, Sample CW Account Admixture
Stones %	0.03	0.03	0.06	0.06	0.10	2.5% or less - Wheat, Rejected grade, Account Stones Over 2.5% - Wheat, Sample Salvage
Total % Foreign material	0.5	1.2	1.5	3.0	10.0	See Mixed grain

Wheat, Canada Western Amber Durum (CWAD), grading factors

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD	Grade, if No. 5 specs not met
Artificial stain, no residue %	0.0	0.1	0.1	0.1	2.0	Wheat, Sample CW Account Stained Kernels
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.01	0.02	0.50	5.00	Wheat, Sample CW Account Heated
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.1	0.4	1.5	5.0	Wheat, Sample CW Account Heated
Other classes %	2.0	3.0	4.3	10.0	49.0	Wheat, Sample CW Account Admixture
Total % Wheats of other classes or varieties	4	8	11	49	No limit	Wheat, Sample CW Account Admixture
Degermed %	4	7	10	13	No limit	
Fireburnt %	0.0	0.0	0.0	0.0	2.0	Wheat, Sample CW Account Fireburnt
Fusarium damage %	0.5	0.5	2.0	2.0	4.0	Wheat, Sample CW Account Fusarium Damage Over 10%- Wheat, Commercial Salvage
Grass green %	0.8	2.0	4.0	10.0	No limit	
Insect damage %	1	3	5	8	No limit	
Natural stain %	1	2	5	8	No limit	
Pink %	3	6	10	No limit	No limit	
Sawfly, midge %	2	8	15	40	No limit	
Severe midge %	0.1	0.3	0.8	2.0	No limit	
Shrunken %	3	3	3	3	No limit	
Broken %	6	8	10	11	13	Sample Broken Grain
Total % Shrunken and broken	7	9	11	12	No limit within broken tolerances	
Penetrated smudge %	0.03	0.25	0.50	Consider overall appearance	No limit	
Total % Smudge	0.5	1.0	3.0	Consider overall appearance	No limit	
Total % Smudge and blackpoint	5	10	20	Consider overall appearance	No limit	
Severely sprouted %	0.2	0.4	3.0	12.0	No limit	
Total % Sprouted	1	2	7	12	No limit	

Wheat, Canada Western Red Winter (CWRW), standard of quality

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	79 (386)	76 (370)	74 (360)	65 (315)	*Wheat, Sample CW Account Light Weight*
Minimum protein %	11.0	11.0	No minimum	No minimum	
Variety	Any variety of the class CWRW designated as such by order of the Commission	Any variety of the class CWRW designated as such by order of the Commission	Any variety of the class CWRW designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CWRW will be graded no lower than No. 3 CWRW on account of mildew
(*) See "Mildew" for applicable standard

Wheat, Canada Western Red Winter (CWRW), foreign material

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CW Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CW Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Admixture*
Stones %	0.03	0.06	0.06	0.10	2.5% or less–*Rejected (grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.4	0.7	1.3	10.0	See *Mixed grain*

Wheat, Canada Western Red Winter (CWRW), grading factors

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed	Grade, if specs for CW Feed not met
Contrasting classes %	1	2	3	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes **	3	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CW Account Stained Kernels*
Blackpoint %	10	20	35	No limit	
Natural stain %	1	2	5	No limit	
Shrunken %	3	3	3	No limit	
Broken%	3	5	8	13	*Sample Broken Grain*
Total % Shrunken and broken	3	5	8	No limit within broken tolerances	

(**) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Western Red Winter (CWRW), grading factors included in total damage

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed	Grade, if specs for CW Feed not met
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.01	0.03	2.50	*Wheat, Sample CW Account Heated*
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.1	0.5	2.5	*Wheat, Sample CW Account Heated*
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CW Account Fireburnt*
Fusarium damage %	0.8	1.0	1.5	4.0	*Wheat, Sample CW Account Fusarium Damage* Over 10% - *Wheat, Commercial Salvage*
Sawfly, midge %	1	5	7	No limit	
Penetrated smudge %	0.1	1.0	3.0	No limit	
Total % Smudge	0.3	3.0	5.0	No limit	
Severely sprouted %	0.1	0.2	0.3	No limit	
Total % Sprouted	0.5	1.0	2.5	No limit	
Total % Damage	2	5	7	N/A	

Wheat, Canada Western Soft White Spring (CWSWS), standard of quality

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	76 (370)	74 (360)	69 (335)	65 (315)	*Wheat, Sample CW Account Light Weight*
Variety	Any variety of the class CWSWS designated as such by order of the Commission	Any variety of the class CWSWS designated as such by order of the Commission	Any variety of the class CWSWS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CWSWS will be graded no lower than No. 3 CWSWS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Soft White Spring (CWSWS), foreign material

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CW Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CW Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Admixture*
Stones %	0.03	0.03	0.06	0.10	2.5% or less– *Rejected (grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	1.0	2.0	3.0	10.0	*See Mixed grain*

Wheat, Canada Western Soft White Spring (CWSWS), grading factors

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed	Grade, if specs for CW Feed not met
Wheats of other classes or varieties %	3	6	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CW Account Stained Kernels*
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CW Account Fireburnt*
Fusarium damage %	1.5	1.5	1.5	4.0	10% or less–*Wheat, Sample CW Account Fusarium Damage* Over 10%– *Wheat, Commercial Salvage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.01	0.01	0.02	2.50	*Wheat, Sample CW Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.1	0.4	2.5	*Wheat, Sample CW Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	3	6	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Shrunken %	3	3	3	No limit	
Broken %	5	6	7	13	*Sample Broken Grain*
Total % Shrunken and broken	7	8	9	No limit within broken tolerances	
Penetrated smudge %	0.1	0.5	1.0	No limit	
Total % Smudge	0.3	1.0	3.0	No limit	
Total % Smudge and blackpoint	10	15	35	No limit	
Severely sprouted %	0.1	0.3	0.5	No limit	
Total % Sprouted	1.0	5.0	8.0	No limit	

Wheat, Canada Western Extra Strong (CWES), standard of quality

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	73 (355)	65 (315)	*Wheat, Sample CW Account Light Weight*
Minimum protein %	10.0	No minimum	No minimum	
Variety	Any variety of the class CWES designated as such by order of the Commission	Any variety of the class CWES designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CWES will be graded no lower than No. 2 CWES on account of mildew
(*) See "Frost" and "Mildew" for applicable standard

Wheat, Canada Western Extra Strong (CWES), foreign material

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.10	*Wheat, Sample CW Account Ergot*
Excreta %	0.01	0.03	0.03	*Wheat, Sample CW Account Excreta*
Matter other than cereal grains %	0.2	0.3	1.0	*Wheat, Sample CW Account Admixture*
Sclerotinia %	0.04	0.04	0.10	*Wheat, Sample CW Account Admixture*
Stones %	0.03	0.06	0.10	2.5% or less– *Rejected(grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	10.0	See *Mixed grain*

Wheat, Canada Western Extra Strong (CWES), grading factors

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed	Grade, if specs for CW Feed not met
Contrasting classes %	1.5	2.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes (**)	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.1	0.1	2.0	*Wheat, Sample CW Account Stained Kernels*
Degermed %	7	13	No limit	
Fireburnt %	0.0	0.0	2.0	*Wheat, Sample CW Account Fireburnt*
Fusarium damage %	1.0	1.0	4.0	*10% or less–Wheat, Sample CW Account Fusarium Damage* Over 10%– *Wheat Commercial Salvage*
Grass green %	2	10	No limit	
Insect damage %	3	8	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.03	2.50	*Wheat, Sample CW Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5	*Wheat, Sample CW Account Heated*
Natural stain %	2	5	No limit	
Pink %	5	10	No limit	
Sawfly, Midge %	2	5	No limit	
Shrunken %	3	3	No limit	
Broken %	7	7	13	*Sample Broken Grain*
Total % Shrunken and broken	8	8	No limit within broken tolerances	
Smudge %	1	Consider overall appearance	No limit	
Total % Smudge and blackpoint	15	Consider overall appearance	No limit	
Severely sprouted %	0.1	0.3	No limit	
Total % Sprouted	0.5	2.0	No limit	

(**) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Prairie Spring White (CPSW), standard of quality

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness *	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	77 (375)	75 (365)	65 (315)	*Wheat, Sample Canada Account Light Weight*
Variety	Any variety of the class CPSW designated as such by order of the Commission	Any variety of the class CPSW designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CPSW will be graded no lower than No. 2 CPSW on account of mildew
(*) See "Frost" and "Mildew" for applicable standard

Wheat, Canada Prairie Spring White (CPSW), foreign material

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.10	*Wheat, Sample Canada Account Ergot*
Excreta %	0.01	0.03	0.03	*Wheat, Sample Canada Account Excreta*
Matter other than cereal grains %	0.2	0.3	1.0	*Wheat, Sample Canada Account Admixture*
Sclerotinia %	0.04	0.04	0.10	*Wheat, Sample Canada Account Admixture*
Stones %	0.03	0.03	0.10	2.5% or less– *Rejected (grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	10.0	See *Mixed grain*

Wheat, Canada Prairie Spring White (CPSW), grading factors

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed	Grade, if specs for CW Feed not met
Contrasting classes %	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.1	0.1	2.0	*Wheat, Sample Canada Account Stained Kernels*
Dark immature %	2.5	10.0	No limit	
Degermed %	7	13	No limit	
Fireburnt %	0.0	0.0	2.0	*Wheat, Sample Canada Account Fireburnt*
Fusarium damage %	1.5	1.5	4.0	10% or less–*Wheat, Sample Canada Account Fusarium Damage* Over 10%– *Wheat, Commercial Salvage*
Grass green %	2	10	No limit	
Insect damage %	3	8	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.03	2.50	*Wheat, Sample Canada Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5	*Wheat, Sample Canada Account Heated*
Natural stain %	2	5	No limit	
Pink %	5	10	No limit	
Sawfly, Midge %	3	8	No limit	
Shrunken %	5	5	No limit	
Broken %	6	6	13	*Sample Broken Grain*
Total % Shrunken and broken	9	9	No limit within broken tolerances	
Penetrated smudge %	0.10	0.50	No limit	
Total % Smudge	1	5	No limit	
Total % Smudge and blackpoint	20	35	No limit	
Severely sprouted %	0.1	0.3	No limit	
Total % Sprouted	0.5	2.0	No limit	

Wheat, Canada Prairie Spring Red (CPSR), standard of quality

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	77 (375)	75 (365)	65 (315)	*Wheat, Sample Canada, Account Light Weight*
Variety	Any variety of the class CPSR designated as such by order of the Commission	Any variety of the class CPSR designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CPSR will be graded no lower than No. 2 CPSR on account of mildew
(*) See "Frost" and "Mildew" for applicable standard

Wheat, Canada Prairie Spring Red (CPSR), foreign material

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.10	*Wheat, Sample Canada Account Ergot*
Excreta %	0.01	0.03	0.03	*Wheat, Sample Canada Account Excreta*
Matter other than cereal grains %	0.2	0.3	1.0	*Wheat, Sample Canada Account Admixture*
Sclerotinia %	0.04	0.04	0.10	*Wheat, Sample Canada Account Admixture*
Stones %	0.03	0.03	0.10	2.5% or less– *Rejected (grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	10.0	See *Mixed grain*

Wheat, Canada Prairie Spring Red (CPSR), grading factors

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed	Grade, if specs for CW Feed not met
Contrasting classes %	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes (**)	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.1	0.1	2.0	*Wheat, Sample Canada Account Stained Kernels*
Dark immature %	2.5	10.0	No limit	
Degermed %	7	13	No limit	
Fireburnt %	0.0	0.0	2.0	*Wheat, Sample Canada Account Fireburnt*
Fusarium damage %	1.5	1.5	4.0	10% or less–*Wheat, Sample Canada Account Fusarium Damage* Over 10%– *Wheat, Commercial Salvage*
Grass green %	2	10	No limit	
Insect damage %	3	8	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.03	2.50	*Wheat, Sample Canada Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5	*Wheat, Sample Canada Account Heated*
Natural stain %	2	5	No limit	
Pink %	5	10	No limit	
Sawfly, Midge %	3	8	No limit	
Shrunken %	5	5	No limit	
Broken %	6	6	13	*Sample Broken Grain*
Total % Shrunken and broken	9	9	No limit within broken tolerances	
Penetrated smudge %	0.10	0.50	No limit	
Total % Smudge	1	5	No limit	
Total % Smudge and blackpoint	20	35	No limit	
Severely sprouted %	0.1	0.3	No limit	
Total % Sprouted	0.5	2.0	No limit	

Wheat, Canada Northern Hard Red (CNHR), standard of quality

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	72 (350)	69 (335)	65 (315)	*Wheat, Sample CW Account Light Weight*
Minimum protein %	11.0	No minimum	No minimum	No minimum	
Variety	Any variety of the class CNHR designated as such by order of the Commission	Any variety of the class CNHR designated as such by order of the Commission	Any variety of the class CNHR designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP	

Note: Samples of CNHR will be graded no lower than No. 3 CNHR on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Northern Hard Red (CNHR), foreign material

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CW Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CW Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.10	*Wheat, Sample CW Account Admixture*
Stones %	0.03	0.03	0.06	0.10	2.5% or less– *Wheat, Rejected grade, Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.6	1.2	2.4	10.0	See *Mixed grain*

Wheat, Canada Northern Hard Red (CNHR), grading factors

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed	Grade, if specs for CW Feed not met
Contrasting classes %	1	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes (**)	3	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP – Wheat, *Sample CW Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CW Account Stained Kernels*
Dark immature %	1	3	10	No limit	
Degermed %	4	7	13	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CW Account Fireburnt*
Fusarium damage %	0.3	0.8	1.5	4.0	*Wheat, Sample CW Account Fusarium Damage Over 10%- Wheat, Commercial Salvage*
Grass green %	0.8	2.0	10.0	No limit	
Insect damage %	1	3	6	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.01	0.02	0.03	2.50	*Wheat, Sample CW Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.4	1.0	2.5	*Wheat, Sample CW Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	2	5	10	No limit	
Sawfly, Midge %	2	5	10	No limit	
Shrunken %	4	4	4	No limit	
Broken %	5	6	7	13	*Sample Broken Grain*
Total % Shrunken and broken	7	8	9	No limit within broken tolerances	
Smudge %	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Severely sprouted %	0.1	0.2	0.3	No limit	
Total % Sprouted	0.5	1.0	3.0	No limit	

(**) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Western Special Purpose (CWSP), standard of quality

Grading factor	No. 1 CWSP	No. 2 CWSP	Grade, if No. 2 specs not met
Minimum test weight kg/hL (g/0.5 L)	72 (350)	65 (315)	*Wheat, Sample CW Account Light Weight*
Variety	Any variety of the class CWSP designated as such by order of the Commission	Any variety of the class CWSP designated as such by order of the Commission	

Wheat, Canada Western Special Purpose (CWSP), foreign material

Grading factor	No. 1 CWSP	No. 2 CWSP	Grade, if No. 2 specs not met
Ergot %	0.1	0.1	*Wheat, Sample CW Account Ergot*
Excreta %	0.03	0.03	*Wheat, Sample CW Account Excreta*
Stones %	0.03	0.06	2.5% or less– *Rejected(grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	5	10	See Mixed grain

Wheat, Canada Western Special Purpose (CWSP), grading factors

Grading factor	No. 1 CWSP	No. 2 CWSP	Grade, if No. 2 specs not met
Heated %	2.5	2.5	*Wheat, Sample CW Account Heated*
Fusarium damage %	1.0	4.0	10% or less–*Wheat, Sample CW Account Fusarium Damage* Over 10%– *Wheat, Commercial Salvage*
Artificial stain, no residue %	2.0	2.0	Wheat, Sample CW Account Stained Kernels
Fireburnt %	2.0	2.0	Wheat, Sample CW Account Fireburnt
Broken %	13	50	Sample Broken Grain

Wheat, Canada Eastern Red Spring (CERS), standard of quality

Grading factor	No. 1 CERS	No. 2 CERS	No. 3 CERS	No. 4 CERS	Grade, if specs for No. 4 CERS not met
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	72 (350)	69 (335)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any variety of the class CERS designated as such by order of the Commission	Any variety of the class CERS designated as such by order of the Commission	Any variety of the class CERS designated as such by order of the Commission	Any variety of the class CERS designated as such by order of the Commission	

Note: Samples of CERS will be graded no lower than No. 3 CERS on account of mildew
(*) See "Mildew" for applicable standard

Wheat, Canada Eastern Red Spring (CERS), foreign material

Grading factor	No. 1 CERS	No. 2 CERS	No. 3 CERS	No. 4 CERS	Grade, if specs for No. 4 CERS not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.03	0.03	0.06	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	3.5	10.0	See *Mixed grain*

Wheat, Canada Eastern Red Spring (CERS), grading factors

Grading factor	No. 1 CERS	No. 2 CERS	No. 3 CERS	No. 4 CERS	Grade, if specs for No. 4 CERS not met
Contrasting classes %	1	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW – Wheat, *Sample CE Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Dark immature %	1	3	10	No limit	
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.0	1.5	5.0	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.05	0.10	2.50	*Wheat, Sample CE Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.8	2.0	2.5	*Wheat, Sample CE Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	2	5	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Shrunken %	6	10	12	No limit	
Broken %	6	10	10	50	*Sample Broken Grain*
Total % Shrunken and broken	7	11	13	No limit within broken tolerances	
Penetrated Smudge %	0.1	0.5	1.0	No limit	
Total % Smudge	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Sprouted %	0.5	2.5	8.0	No limit	

Wheat, Canada Eastern Hard Red Winter (CEHRW), standard of quality

Grading factor	No. 1 CEHRW	No. 2 CEHRW	No. 3 CEHRW	No. 4 CEHRW	Grade, if specs for No. 4 CEHRW not met
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	76 (370)	74 (360)	69 (335)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any variety of the class CEHRW designated as such by order of the Commission	Any variety of the class CEHRW designated as such by order of the Commission	Any variety of the class CEHRW designated as such by order of the Commission	Any variety of the class CEHRW designated as such by order of the Commission	

Note: Samples of CEHRW will be graded no lower than No. 3 CEHRW on account of mildew
(*) See “Mildew” for applicable standard

Wheat, Canada Eastern Hard Red Winter (CEHRW), foreign material

Grading factor	No. 1 CEHRW	No. 2 CEHRW	No. 3 CEHRW	No. 4 CEHRW	Grade, if specs for No. 4 CEHRW not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.03	0.03	0.06	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	3.5	10.0	See *Mixed grain*

Wheat, Canada Eastern Hard Red Winter (CEHRW), grading factors

Grading factor	No. 1 CEHRW	No. 2 CEHRW	No. 3 CEHRW	No. 4 CEHRW	Grade, if specs for No. 4 CEHRW not met
Contrasting classes %	1	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW – Wheat, *Sample CE Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Dark immature %	1	3	10	No limit	
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.0	1.5	5.0	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.05	0.10	2.50	*Wheat, Sample CE Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.8	2.0	2.5	*Wheat, Sample CE Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	1	5	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Shrunken %	6	10	12	No limit	
Broken %	6	10	10	50	*Sample Broken Grain*
Total % Shrunken and broken	7	11	13	No limit within broken tolerances	
Penetrated Smudge %	0.1	0.5	1.0	No limit	
Total % Smudge	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Sprouted %	0.5	2.5	8.0	No limit	

Wheat, Canada Eastern Soft Red Winter (CESRW), standard of quality

Grading factor	No. 1 CESRW	No. 2 CESRW	No. 3 CESRW	No. 4 CESRW	Grade, if specs for No. 4 CESRW not met
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	76 (370)	74 (360)	69 (335)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any variety of the class CESRW designated as such by order of the Commission	Any variety of the class CESRW designated as such by order of the Commission	Any variety of the class CESRW designated as such by order of the Commission	Any variety of the class CESRW designated as such by order of the Commission	

Note: Samples of CESRW will be graded no lower than No. 3 CESRW on account of mildew
(*) See “Mildew” for applicable standard

Wheat, Canada Eastern Soft Red Winter (CESRW), foreign material

Grading factor	No. 1 CESRW	No. 2 CESRW	No. 3 CESRW	No. 4 CESRW	Grade, if specs for No. 4 CESRW not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.03	0.03	0.06	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.8	1.5	3.5	10.0	See *Mixed grain*

Wheat, Canada Eastern Soft Red Winter (CESRW), grading factors

Grading factor	No. 1 CESRW	No. 2 CESRW	No. 3 CESRW	No. 4 CESRW	Grade, if specs for No. 4 CESRW not met
Contrasting classes %	1	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW – Wheat, *Sample CE Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Dark immature %	1	3	10	No limit	
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.0	1.5	5.0	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.05	0.10	2.50	*Wheat, Sample CE Account Heated*
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.8	2.0	2.5	*Wheat, Sample CE Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	1	5	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Shrunken %	6	10	12	No limit	
Broken %	6	10	10	50	*Sample Broken Grain*
Total % Shrunken and broken	7	11	13	No limit within broken tolerances	
Penetrated Smudge %	0.1	0.5	1.0	No limit	
Total % Smudge	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Sprouted %	0.5	2.5	8.0	No limit	

Wheat, Canada Eastern Amber Durum (CEAD), standard of quality

Grading factor	No. 1 CEAD	No. 2 CEAD	No. 3 CEAD	No. 4 CEAD	Grade, if specs for No. 4 CEAD not met
Degree of soundness	Reasonably well matured, reasonably free from damaged kernels	Reasonably well matured, reasonably free from severely damaged kernels	Fairly well matured, may be moderately weather-damaged or frost-damaged, reasonably free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	79 (387)	77 (377)	74 (362)	65 (318)	*Wheat, Sample CE Account Light Weight*
Minimum hard vitreous kernels %	80	60	40	No minimum	
Variety	Any variety of the class CEAD designated as such by order of the Commission	Any variety of the class CEAD designated as such by order of the Commission	Any variety of the class CEAD designated as such by order of the Commission	Any variety of amber durum wheat	

Wheat, Canada Eastern Amber Durum (CEAD), foreign material

Grading factor	No. 1 CEAD	No. 2 CEAD	No. 3 CEAD	No. 4 CEAD	Grade, if specs for No. 4 CEAD not met
Ergot %	0.02	0.02	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.02	0.02	0.04	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.03	0.03	0.03	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	0.5	1.5	2.0	10.0	See *Mixed grain*

Wheat, Canada Eastern Amber Durum (CEAD), grading factors

Grading factor	No. 1 CEAD	No. 2 CEAD	No. 3 CEAD	No. 4 CEAD	Grade, if specs for No. 4 CEAD not met
Other classes %	2	4	5	49	*Wheat, Sample CE Account Admixture*
Total % Wheats of other classes or varieties	5	10	15	No limit	
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.0	1.0	5.0	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.04	0.06	2.50	*Wheat, Sample CE Account Heated*
Total % Heated, Binburnt, severely mildewed rotted, mouldy	0.1	0.3	0.8	2.5	*Wheat, Sample CE Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	3	6	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Severe midge %	0.1	0.3	0.8	No limit	
Penetrated smudge %	0.1	0.3	0.8	No limit	
Total % Severe midge and penetrated smudge	0.1	0.3	0.8	No limit	
Total % Smudge	0.5	1.0	3.0	No limit	
Total % Smudge and blackpoint	10	15	35	No limit	
Shrunken %	6	10	12	No limit	
Broken %	6	10	10	50	*Sample Broken Grain*
Total % Shrunken and broken	7	10	15	No limit within broken tolerances	
Sprouted %	0.5	2.0	7.0	No limit	

Wheat, Canada Eastern White Winter (CEWW), standard of quality

Grading factor	No. 1 CEWW	No. 2 CEWW	No. 3 CEWW	No. 4 CEWW	Grade, if specs for No. 4 CEWW not met
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	76 (370)	74 (360)	69 (335)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any variety of the class CEWW designated as such by order of the Commission	Any variety of the class CEWW designated as such by order of the Commission	Any variety of the class CEWW designated as such by order of the Commission	Any variety of the class CEWW designated as such by order of the Commission	

Note: Samples of CEWW will be graded no lower than No. 3 CEWW on account of mildew
(*) See "Mildew" for applicable standard

Wheat, Canada Eastern White Winter (CEWW), foreign material

Grading factor	No. 1 CEWW	No. 2 CEWW	No. 3 CEWW	No. 4 CEWW	Grade, if specs for No. 4 CEWW not met
Ergot %	0.04	0.04	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	0.2	0.3	0.5	1.0	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.04	0.04	0.04	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.03	0.03	0.03	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	1.0	2.0	3.0	10.0	See *Mixed grain*

Wheat, Canada Eastern White Winter (CEWW), grading factors

Grading factor	No. 1 CEWW	No. 2 CEWW	No. 3 CEWW	No. 4 CEWW	Grade, if specs for No. 4 CEWW not met
Contrasting classes %	1	2	3	10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW – Wheat, *Sample CE Account Admixture*
Total % Wheats of other classes or varieties and contrasting classes	5	6	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW	Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW – Wheat, *Sample CE Account Admixture*
Artificial stain, no residue %	0.0	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Degermed %	4	7	10	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.0	1.0	5.0	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	0.8	2.0	4.0	No limit	
Insect damage %	1	3	5	No limit	
Binburnt, severely mildewed rotted, mouldy %	0.02	0.04	0.06	2.50	*Wheat, Sample CE Account Heated*
Total % Heated, Binburnt, severely mildewed rotted, mouldy %	0.1	0.3	0.8	2.5	*Wheat, Sample CE Account Heated*
Natural stain %	1	2	5	No limit	
Pink %	3	6	10	No limit	
Sawfly, Midge %	2	8	15	No limit	
Shrunken and broken %	3	5	8	No limit–maximum 50% broken	*Sample Broken Grain*
Penetrated Smudge %	0.1	0.5	1.0	No limit	
Total % Smudge	0.3	1.0	3.0	No limit	
Total % Smudge and blackpoint	10	15	35	No limit	
Sprouted %	1.0	5.0	8.0	No limit	

Wheat, Canada Eastern Other Wheat (CEOW), standard of quality

Grading factor	No. 1 CEOW	No. 2 CEOW	No. 3 CEOW	Grade, if specs for No. 3 CEOW not met
Degree of Soundness	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	74 (360)	69 (335)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any variety of the class CEOW designated as such by order of the Commission	Any variety of the class CEOW designated as such by order of the Commission	Any variety of the class CEOW designated as such by order of the Commission	

Wheat, Canada Eastern Other Wheat (CEOW), foreign material

Grading factor	No. 1 CEOW	No. 2 CEOW	No. 3 CEOW	Grade, if specs for No. 3 CEOW not met
Ergot %	0.04	0.04	0.10	*Wheat, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.03	*Wheat Sample CE Account Excreta*
Matter other than cereal grains %	0.3	0.5	1.0	*Wheat Sample CE Account Admixture*
Sclerotinia %	0.04	0.04	0.25	*Wheat Sample CE Account Admixture*
Stones %	0.03	0.06	0.10	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*
Total % Foreign material	1.5	3.5	10.0	See *Mixed grain*

Wheat, Canada Eastern Other Wheat (CEOW), grading factors

Grading factor	No. 1 CEOW	No. 2 CEOW	No. 3 CEOW	Grade, if specs for No. 3 CEOW not met
Artificial stain, no residue %	0.1	0.1	2.0	*Wheat, Sample CE Account Stained Kernels*
Fireburnt %	0.0	0.0	2.0	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	1.0	1.5	5.0	*Wheat, Sample CE Account Fusarium Damage*
Heated %	0.8	2.0	2.5	*Wheat, Sample CE Account Heated*

Note: Additional grading factors may apply and be assessed based on contract specifications set by the selecting company

Wheat, Canada Eastern Feed (CEFD), standard of quality

Grading factor	CE Feed	Grade, if specs for CE Feed not met
Degree of soundness	Reasonably sweet, may be immature or weather damaged	
Minimum test weight kg/hl (g/0.5L)	65 (315)	*Wheat, Sample CE Account Light Weight*
Variety	Any class or variety of wheat excluding amber durum	

Wheat, Canada Eastern Feed (CEFD), foreign material

Grading factor	CE Feed	Grade, if specs for CE Feed not met
Ergot %	0.1	*Wheat, Sample CE Account Ergot*
Excreta %	0.03	*Wheat, Sample CE Account Excreta*
Matter other than cereal grains %	1	*Wheat, Sample CE Account Admixture*
Sclerotinia %	0.25	*Wheat, Sample CE Account Admixture*
Stones %	0.1	*2.5% or less– Wheat, Sample CE Account Stones* *Over 2.5%– Wheat, Sample Salvage*
Total % Foreign material	10	*See Mixed grain*

Wheat, Canada Eastern Feed (CEFD), grading factors

Grading factor	CE Feed	Grade, if specs for CE Feed not met
Artificial stain, no residue %	2	*Wheat, Sample CE Account Stained Kernels*
Binburnt, severely mildewed, rotted, mouldy %	2.5	*Wheat, Sample CE Account Heated*
Total % Heated, Binburnt, severely mildewed, rotted, mouldy	2.5	*Wheat, Sample CE Account Heated*
Contrasting classes %	10% or less, either alone or in combination with each other, of amber durum and any variety of the class CEOW	*Over 10%, either alone or in combination with each other, of amber durum and any variety of the class CEOW - Sample CE Account Admixture*
Dark immature %	No limit	
Degermed %	No limit	
Fireburnt %	2	*Wheat, Sample CE Account Fireburnt*
Fusarium damage %	5	*Wheat, Sample CE Account Fusarium Damage*
Grass green %	No limit	
Insect damage %	No limit	
Natural stain %	No limit	
Pink %	No limit	
Sawfly, midge %	No limit	
Shrunken %	No limit	
Broken %	50	*Sample Broken Grain*
Total % Shrunken and broken	No limit within broken tolerances	
Smudge %	No limit	
Total % Smudge and blackpoint	No limit	
Sprouted %	No limit	

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the commercially clean determination table upon following the *Determination of commercially clean* procedures described in this chapter.

Dockage is not reported for commercially clean shipments.

Note: For shipments of eastern wheat classes, commercial cleanliness specifications listed in the CWRS commercially clean determination table is to be used.

Not commercially clean (NCC)

If any of the components exceed the allowable limits as defined in the table, the shipment becomes *not commercially clean*, and dockage is assessed using procedures for primary samples.

Export shipments, which do not meet the standards for commercial cleanliness, are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

The purpose of this cleaning is not to remove all foreign material, but rather to reduce the admixture of conspicuous separable material to within the grade tolerance.

Refer to *Cleaning for grade improvement* in the *Determination of dockage* section for full instructions.

Grading

Wheat on export is graded using standards and the export grade determination tables.

Where no export grade determination table exists, and for export of Eastern classes of wheat, the primary grade determination tables are to be used.

Commercially clean determination table

Class	CWRS	CWHWS	CWAD			CWRW	CWSWS	CWES	CPSR	CPSW	CNHR	All classes (except CWAD and CWSP)	CWSP
Grade	No.1, 2, 3	No.1, 2, 3	No.1, 2, 3	No. 4	No. 5	No.1, 2,3	No.1, 2, 3	No.1, 2	No.1, 2	No.1, 2	No.1, 2, 3	CW Feed	No.1, 2
Broken grain through No. 5 buckwheat sieve (Exiting Primary %)	0.3	0.3	0.3	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5
Broken grain through No. 5 buckwheat sieve (Exiting Terminal %)	0.35	0.35	0.35	0.5	0.5	0.35	0.35	0.35	0.35	0.35	0.35	0.5	0.5
Broken grain through No. 5 buckwheat sieve (Exiting St. Lawrence Terminal %) *	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Small seeds %	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Attrition %	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Roughage %	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total small seeds, attrition and roughage %	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Large seeds %	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5
Wild oats %	0.05	0.05	0.15	0.15	0.15	0.10	0.05	0.10	0.10	0.10	0.05	0.1	0.1
Total small seeds, large seeds and wild oats %	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5
Total small seeds, large seeds, wild oats, roughage, and broken grain though No. 5 buckwheat sieve %	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Note: For shipments of eastern wheat classes, commercial cleanliness specifications listed in the CWRS commercially clean determination table is to be used.

* St. Lawrence Terminal includes Montréal, Sorel, Trois-Rivières, Québec, Baie-Comeau, Port-Cartier and Halifax

Export grade determination tables

Wheat, Canada Western Red Spring (CWRS), standard of quality

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels
Minimum test weight kg/hL (g/0.5 L)	79 (385)	77 (375)	76 (370)	73 (355)
Minimum hard vitreous kernels %	65	No minimum	No minimum	No minimum
Minimum protein %	10.0	No minimum	No minimum	No minimum
Variety	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and CWSP

Note: Samples of CWRS will be graded no lower than No. 3 CWRS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Red Spring (CWRS), foreign material

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed
Ergot %	0.04	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	1.0
Other cereal grains %	0.4	0.8	1.3	5.0
Sclerotinia %	0.04	0.04	0.04	0.10
Stones %	0.03	0.03	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.25
Total % Foreign material (**)	0.4	0.8	1.3	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Red Spring (CWRS), grading factors

Grading factor	No. 1 CWRS	No. 2 CWRS	No. 3 CWRS	CW Feed
Artificial stain, no residue %	0.0	0.1	0.1	2.0
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.02	0.03	2.50
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.4	1.0	2.5
Contrasting classes %	0.5	1.5	2.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes ***	1.5	3.0	5.0	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Dark immature %	1	3	10	No limit
Degermed %	4	7	13	No limit
Fireburnt %	0.0	0.0	0.0	2.0
Fusarium damage %	0.3	0.8	1.5	4.0
Grass green %	0.8	2.0	10.0	No limit
Insect damage %	1	3	6	No limit
Natural stain %	1	2	5	No limit
Pink %	2	5	10	No limit
Sawfly, midge %	2	5	10	No limit
Shrunken %	4	4	4	4
Broken %	5	6	7	13
Total % Shrunken and broken	7	8	9	15
Smudge %	0.3	1.0	5.0	No limit
Total % Smudge and blackpoint	10	20	35	No limit
Severely sprouted %	0.1	0.2	0.3	No limit
Total % Sprouted	0.5	1.0	3.0	No limit

(***) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Western Hard White Spring (CWHWS), standard of quality

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels
Minimum test weight kg/hL (g/0.5 L)	79 (385)	77 (375)	76 (370)	73 (355)
Minimum protein %	10.0	No minimum	No minimum	No minimum
Variety	Any variety of the class CWHWS designated as such by order of the Commission	Any variety of the class CWHWS designated as such by order of the Commission	Any variety of the class CWHWS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and CWSP

Note: Samples of CWHWS will be graded no lower than No. 3 CWHWS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Hard White Spring (CWHWS), foreign material

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed
Ergot %	0.04	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	1.0
Other cereal grains %	0.4	0.8	1.3	5.0
Sclerotinia %	0.04	0.04	0.04	0.10
Stones %	0.03	0.03	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.25
Total % Foreign material (**)	0.4	0.8	1.3	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Hard White Spring (CWHWS), grading factors

Grading factor	No. 1 CWHWS	No. 2 CWHWS	No. 3 CWHWS	CW Feed
Artificial stain, no residue %	0.0	0.1	0.1	2.0
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.02	0.03	2.50
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.4	1.0	2.5
Contrasting classes %	0.5	1.5	2.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes	1.5	3.0	5.0	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Dark immature %	1	3	10	No limit
Degermed %	4	7	13	No limit
Fireburnt %	0.0	0.0	0.0	2.0
Fusarium damage %	0.3	0.8	1.5	4.0
Grass green %	0.8	2.0	10.0	No limit
Insect damage %	1	3	6	No limit
Natural stain %	1	2	5	No limit
Pink %	2	5	10	No limit
Sawfly, midge %	2	5	10	No limit
Shrunken %	4	4	4	4
Broken %	5	6	7	13
Total % Shrunken and broken	7	8	9	15
Smudge %	0.3	1.0	5.0	No limit
Total % Smudge and blackpoint	10	20	35	No limit
Severely sprouted %	0.1	0.2	0.3	No limit
Total % Sprouted	0.5	1.0	3.0	No limit

Wheat, Canada Western Amber Durum (CWAD), standard of quality

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Reasonably well matured, reasonably free from severely damaged kernels	Fairly well matured, may be moderately weather-damaged or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)	80 (392)	79 (387)	78 (382)	75 (367)	73 (357)
Minimum hard vitreous kernels %	80	60	40	No minimum	No minimum
Minimum protein %	9.5	No minimum	No minimum	No minimum	No minimum
Variety	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of the class CWAD designated as such by order of the Commission	Any variety of amber durum wheat

Note: Samples of CWAD will be graded no lower than No. 4 CWAD on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Amber Durum (CWAD), foreign material

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD
Ergot %	0.02	0.02	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	0.5	1.0
Other cereal grains %	0.5	0.8	1.0	3.0	5.0
Sclerotinia %	0.02	0.02	0.04	0.04	0.10
Stones %	0.03	0.03	0.06	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.10	0.25
Total % Foreign material (**)	0.5	0.8	1.0	3.0	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Amber Durum (CWAD), grading factors

Grading factor	No. 1 CWAD	No. 2 CWAD	No. 3 CWAD	No. 4 CWAD	No. 5 CWAD
Artificial stain, no residue %	0.0	0.1	0.1	0.1	2.0
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.01	0.02	0.50	5.00
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.1	0.4	1.5	5.0
Other classes %	2.0	2.5	3.5	10.0	15.0
Total % Wheats of other classes or varieties	3	5	7	15	No limit
Degermed %	4	7	10	13	No limit
Fireburnt %	0.0	0.0	0.0	0.0	2.0
Fusarium damage %	0.5	0.5	2.0	2.0	4.0
Grass green %	0.8	2.0	4.0	10.0	No limit
Insect damage %	1	3	5	8	No limit
Natural stain %	1	2	5	8	No limit
Pink %	3	6	10	No limit	No limit
Sawfly, midge %	2	8	15	40	No limit
Severe midge %	0.1	0.3	0.8	2.0	No limit
Shrunken %	3	3	3	3	3
Broken %	6	8	10	11	13
Total % Shrunken and broken	7	9	11	12	15
Penetrated smudge %	0.03	0.25	0.50	Consider overall appearance	No limit
Total % Smudge	0.5	1.0	3.0	Consider overall appearance	No limit
Total % Smudge and blackpoint	5	10	20	Consider overall appearance	No limit
Severely sprouted %	0.2	0.4	3.0	12.0	No limit
Total % Sprouted	1	2	7	12	No limit

Wheat, Canada Western Red Winter (CWRW), standard of quality

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels
Minimum test weight kg/hL (g/0.5 L)	79 (386)	76 (370)	74 (361)	73 (355)
Minimum protein %	11.0	11.0	No minimum	No minimum
Variety	Any variety of the class CWRW designated as such by order of the Commission	Any variety of the class CWRW designated as such by order of the Commission	Any variety of the class CWRW designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP

Note: Samples of CWRW will be graded no lower than No. 3 CWRW on account of mildew
(*) See “Mildew” for applicable standard

Wheat, Canada Western Red Winter (CWRW), foreign material

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed
Ergot %	0.04	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	1.0
Other cereal grains %	0.4	0.7	1.3	5.0
Sclerotinia %	0.04	0.04	0.04	0.10
Stones %	0.03	0.06	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.25
Total % Foreign material (**)	0.4	0.7	1.3	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Red Winter (CWRW), grading factors

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed
Contrasting classes %	1	2	3	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes ***	3	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.0	0.1	0.1	2.0
Blackpoint %	10	20	35	No limit
Natural stain %	1	2	5	No limit
Shrunken %	3	3	3	4
Broken%	3	5	8	13
Total % Shrunken and broken	3	5	8	15

(***) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Western Red Winter (CWRW), grading factors included in total damage

Grading factor	No. 1 CWRW	No. 2 CWRW	No. 3 CWRW	CW Feed
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.01	0.03	2.50
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.1	0.5	2.5
Fireburnt %	0.0	0.0	0.0	2.0
Fusarium damage %	0.8	1.0	1.5	4.0
Sawfly, midge %	1	5	7	No limit
Penetrated smudge %	0.1	1.0	3.0	No limit
Total % Smudge	0.3	3.0	5.0	No limit
Severely sprouted %	0.1	0.2	0.3	No limit
Total % Sprouted	0.5	1.0	2.5	No limit
Total % Damage	2	5	7	N/A

Wheat, Canada Western Soft White Spring (CWSWS), standard of quality

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately weather-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)	78 (380)	75 (365)	75 (365)	73 (355)
Variety	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any variety of the class CWRS designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and CWSP

Note: Samples of CWSWS will be graded no lower than No. 3 CWSWS on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Soft White Spring (CWSWS), foreign material

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed
Ergot %	0.04	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	1.0
Other cereal grains %	0.8	1.0	1.5	5.0
Sclerotinia %	0.04	0.04	0.04	0.10
Stones %	0.03	0.03	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.25
Total % Foreign material (**)	0.8	1.0	1.5	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Soft White Spring (CWSWS), grading factors

Grading factor	No. 1 CWSWS	No. 2 CWSWS	No. 3 CWSWS	CW Feed
Wheats of other classes or varieties %	1.5	3.0	5.0	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.0	0.1	0.1	2.0
Degermed %	4	7	10	No limit
Fireburnt %	0.0	0.0	0.0	2.0
Fusarium damage %	1.5	1.5	1.5	4.0
Grass green %	0.8	2.0	4.0	No limit
Insect damage %	1	3	5	No limit
Binburnt, severely mildewed rotted, mouldy %	0.01	0.01	0.02	2.50
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.1	0.4	2.5
Natural stain %	1	2	5	No limit
Pink %	3	6	10	No limit
Sawfly, Midge %	2	8	15	No limit
Shrunken %	3	3	3	4
Broken %	5	6	7	13
Total % Shrunken and broken	7	8	9	15
Penetrated smudge %	0.1	0.5	1.0	No limit
Total % Smudge	0.3	1.0	3.0	No limit
Total % Smudge and blackpoint	10	15	35	No limit
Severely sprouted %	0.1	0.3	0.5	No limit
Total % Sprouted	1.0	5.0	8.0	No limit

Wheat, Canada Western Extra Strong (CWES), standard of quality

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed
Degree of soundness*	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)	78 (380)	76 (370)	73 (355)
Minimum protein %	10.0	No minimum	No minimum
Variety	Any variety of the class CWES designated as such by order of the Commission	Any variety of the class CWES designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP

Note: Samples of CWES will be graded no lower than No. 2 CWES on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Western Extra Strong (CWES), foreign material

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed
Ergot %	0.04	0.04	0.10
Excreta %	0.01	0.03	0.03
Matter other than cereal grains %	0.2	0.3	1.0
Other cereal grains %	0.8	1.5	5.0
Sclerotinia %	0.04	0.04	0.10
Stones %	0.03	0.06	0.10
Total % Mineral matter including stones	0.10	0.10	0.25
Total % Foreign material (**)	0.8	1.5	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Western Extra Strong (CWES), grading factors

Grading factor	No. 1 CWES	No. 2 CWES	CW Feed
Contrasting classes %	1.5	2.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes (***)	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.1	0.1	2.0
Degermed %	7	13	No limit
Fireburnt %	0.0	0.0	2.0
Fusarium damage %	1.0	1.0	4.0
Grass green %	2	10	No limit
Insect damage %	3	8	No limit
Binburnt, severely mildewed rotted, mouldy %	0.01	0.01	2.50
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5
Natural stain %	2	5	No limit
Pink %	5	10	No limit
Sawfly, Midge %	2	5	No limit
Shrunken %	3	3	4
Broken %	7	7	13
Total % Shrunken and broken	8	8	15
Smudge %	1	Consider overall appearance	No limit
Total % Smudge and blackpoint	15	Consider overall appearance	No limit
Severely sprouted %	0.10	0.30	No limit
Total % Sprouted	0.5	2.0	No limit

(***) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Prairie Spring Red (CPSR), standard of quality

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed
Degree of soundness*	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)	77 (375)	75 (365)	73 (355)
Variety	Any variety of the class CPSR designated as such by order of the Commission	Any variety of the class CPSR designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP

Note: Samples of CPSR will be graded no lower than No. 2 CPSR on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Prairie Spring Red (CPSR), foreign material

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed
Ergot %	0.04	0.04	0.10
Excreta %	0.01	0.03	0.03
Matter other than cereal grains %	0.2	0.3	1.0
Other cereal grains %	0.8	1.5	5.0
Sclerotinia %	0.04	0.04	0.10
Stones %	0.03	0.03	0.10
Total % Mineral matter including stones	0.10	0.10	0.25
Total % Foreign material (**)	0.8	1.5	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Prairie Spring Red (CPSR), grading factors

Grading factor	No. 1 CPSR	No. 2 CPSR	CW Feed
Contrasting classes %	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes (*)**	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.1	0.1	2.0
Dark immature %	2.5	10.0	No limit
Degermed %	7	13	No limit
Fireburnt %	0.0	0.0	2.0
Fusarium damage %	1.5	1.5	4.0
Grass green %	2	10	No limit
Insect damage %	3	8	No limit
Binburnt, severely mildewed rotted, mouldy %	0.02	0.03	2.50
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5
Natural stain %	2	5	No limit
Pink %	5	10	No limit
Sawfly, Midge %	3	8	No limit
Shrunken %	5	5	4
Broken %	6	6	13
Total % Shrunken and broken	9	9	15
Penetrated smudge %	0.10	0.50	No limit
Total % Smudge	1	5	No limit
Total % Smudge and blackpoint	20	35	No limit
Severely sprouted %	0.1	0.3	No limit
Total % Sprouted	0.5	2.0	No limit

(***) See working tolerance for “Wheats of Other Classes or Varieties”

Wheat, Canada Prairie Spring White (CPSW), standard of quality

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed
Degree of soundness*	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)	77 (375)	75 (365)	73 (355)
Variety	Any variety of the class CPSW designated as such by order of the Commission	Any variety of the class CPSW designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP

Note: Samples of CPSW will be graded no lower than No. 2 CPSW on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Prairie Spring White (CPSW), foreign material

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed
Ergot %	0.04	0.04	0.10
Excreta %	0.01	0.03	0.03
Matter other than cereal grains %	0.2	0.3	1.0
Other cereal grains %	0.8	1.5	5.0
Sclerotinia %	0.04	0.04	0.10
Stones %	0.03	0.03	0.10
Total % Mineral matter including stones	0.10	0.10	0.25
Total % (**) Foreign material	0.8	1.5	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Prairie Spring White (CPSW), grading factors

Grading factor	No. 1 CPSW	No. 2 CPSW	CW Feed
Contrasting classes %	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.1	0.1	2.0
Dark immature %	2.5	10.0	No limit
Degermed %	7	13	No limit
Fireburnt %	0.0	0.0	2.0
Fusarium damage %	1.5	1.5	4.0
Grass green %	2	10	No limit
Insect damage %	3	8	No limit
Binburnt, severely mildewed rotted, mouldy %	0.02	0.03	2.50
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.4	1.0	2.5
Natural stain %	2	5	No limit
Pink %	5	10	No limit
Sawfly, Midge %	3	8	No limit
Shrunken %	5	5	4
Broken %	6	6	13
Total % Shrunken and broken	9	9	15
Penetrated smudge %	0.10	0.50	No limit
Total % Smudge	1	5	No limit
Total % Smudge and blackpoint	20	35	No limit
Severely sprouted %	0.10	0.30	No limit
Total % Sprouted	0.5	2.0	No limit

Wheat, Canada Northern Hard Red (CNHR), standard of quality

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed
Degree of soundness*	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels
Minimum test weight kg/hL (g/0.5 L)	79 (385)	77 (375)	76 (370)	73 (355)
Minimum protein %	11.0	No minimum	No minimum	No minimum
Variety	Any variety of the class CNHR designated as such by order of the Commission	Any variety of the class CNHR designated as such by order of the Commission	Any variety of the class CNHR designated as such by order of the Commission	Any class or variety of wheat excluding amber durum and any variety of the class CWSP

Note: Samples of CNHR will be graded no lower than No. 3 CNHR on account of mildew
(*) See “Frost” and “Mildew” for applicable standard

Wheat, Canada Northern Hard Red (CNHR), foreign material

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed
Ergot %	0.04	0.04	0.04	0.10
Excreta %	0.01	0.01	0.01	0.03
Matter other than cereal grains %	0.2	0.3	0.5	1.0
Other cereal grains %	0.4	0.8	1.3	5.0
Sclerotinia %	0.04	0.04	0.04	0.10
Stones %	0.03	0.03	0.06	0.10
Total % Mineral matter including stones	0.06	0.10	0.10	0.25
Total % Foreign material (**)	0.4	0.8	1.3	5.0

(**) Total foreign material includes all components in the commercially clean determinant table except broken wheat passing through the No.5 buckwheat sieve

Wheat, Canada Northern Hard Red (CNHR), grading factors

Grading factor	No. 1 CNHR	No. 2 CNHR	No. 3 CNHR	CW Feed
Contrasting classes %	1	3	5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Total % Wheats of other classes or varieties and contrasting classes (*)**	3	5	10	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP
Artificial stain, no residue %	0.0	0.1	0.1	2.0
Dark immature %	1	3	10	No limit
Degermed %	4	7	13	No limit
Fireburnt %	0.0	0.0	0.0	2.0
Fusarium damage %	0.3	0.8	1.5	4.0
Grass green %	0.8	2.0	10.0	No limit
Insect damage %	1	3	6	No limit
Binburnt, severely mildewed rotted, mouldy %	0.01	0.02	0.03	2.50
Total % Heated, binburnt, severely mildewed, rotted, mouldy	0.1	0.4	1.0	2.5
Natural stain %	1	2	5	No limit
Pink %	2	5	10	No limit
Sawfly, Midge %	2	5	10	No limit
Shrunken %	4	4	4	4
Broken %	5	6	7	13
Total % Shrunken and broken	7	8	9	15
Smudge %	0.3	1.0	5.0	No limit
Total % Smudge and blackpoint	10	20	35	No limit
Severely sprouted %	0.1	0.2	0.3	No limit
Total % Sprouted	0.5	1.0	3.0	No limit

(***) See working tolerance for “Wheats of Other Classes or Varieties”

5. Rye

Determination of commercially clean 5-3

Determination of dockage 5-5
Definitions 5-5
Dockage not reported 5-5
Normal cleaning procedures 5-5
Composition of dockage 5-6
Cleaning for grade improvement 5-6
Optional analysis 5-7

Grading 5-8
Important definitions 5-8
Net weight of sample 5-8
Hazardous substances in samples 5-8
Processed sample 5-8
Rounding rules 5-8
Non-registered varieties 5-8
Representative portion for grading 5-9

Grading factors 5-10
Broken (BKN) 5-10
Contaminated grain 5-10
Degermed kernels (DGM) 📷 5-11
Earth pellets (EP) 5-11
Ergot (ERG) 5-11
Excreta (EXCR) 5-11
Extraneous material 5-11
Fertilizer pellets (FERT PLTS) 5-11
Fireburnt kernels (FBNT) 5-12
Foreign material (FM) 5-12
Fusarium damage (FUS DMG) 5-12
Heated kernels (HTD) 5-12
Matter other than cereal grains (MOTCG) 5-12
Mineral matter (MIN MAT) 5-12
Odour (ODOR) 5-13
Other cereal grains excluding wheat (OCGXWHT) 5-13
Rotted (ROT) 5-13
Sclerotinia sclerotiorum (SCL) 5-13
Smudge (SM) 5-13
Soft earth pellets (SEP) 5-13
Sprouted kernels (SPTD) 📷 5-14
Stones (STNS) 5-14
Test weight (TWT) 5-16
Treated seed and other chemical substances 5-16
Variety (VAR) 5-16
Wheat (WHT) 5-16

Primary and export grade determination tables 5-17
Rye, Canada Western (CW), standard of quality 5-17
Rye, Canada Western (CW), damage 5-17
Rye, Canada Western (CW), foreign material 5-17

Rye, Canada Eastern (CE), standard of quality 5-18
Rye, Canada Eastern (CE), damage 5-18
Rye, Canada Eastern (CE), foreign material 5-18

Export shipments 5-19
Commercially clean (CCLN) 5-19
Not commercially clean (NCC) 5-19
Grading 5-19

Determination of commercially clean

Dockage is not assessed on rye samples that meet the commercially clean specifications defined in the commercially clean determination table. The table is found in the Export shipments section of this chapter. All samples must be analyzed to determine if they are commercially clean prior to dockage assessment. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.05% of small seeds without hand sieving and weighing the seeds then dockage will be assessed using procedures defined under *Determination of dockage*. Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures outlined in steps 1 through 7 below to confirm that the sample is not commercially clean prior to assessing a dockage.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
2. Place approximately 250 grams of the sample at a time on the No. 4.5 round hole hand sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. All material passing through the No. 4.5 round hole sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for material removable through the No. 4.5 round hole sieve. (Column #2 in the commercially clean determination table)
5. Small seeds passing through the No. 4.5 round hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #1 in the commercially clean determination table)
6. The sample portions remaining on top of the No. 4.5 are recombined and divided using a Boerner-type divider to a representative portion of not less than 250 grams.
7. The portion divided from step 6 is handpicked to remove roughage material which is weighed and the percentage calculated. Add the roughage percentage to the total obtained in step 4 to determine if it meets the commercially clean specifications of the grade for small seeds, attrition and roughage. (Column #2 in the commercially clean determination table)

   Note: If the roughage material contains unthreshed rye heads, the heads are squeezed to remove the kernels of rye prior to weighing. The rye kernel is not included when assessing the concentration of roughage for commercial cleanliness. However, care should be taken to keep these kernels separate. If it is determined that the sample is “NCC”, kernels squeezed from the unthreshed heads will be included in the dockage.

Should the percentage concentration of either of the factors determined in steps 1 through 7 exceed the specifications set out in columns 1 or 2 of the commercially clean determination table, the sample will be considered to be not commercially clean. Dockage will be assessed on samples determined to be not commercially clean by using the procedures defined under *Determination of dockage.*

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures,* using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Rye, Sample CW/CE Account Fireburnt
- Rye, Sample Salvage
- Rye, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 5
Air control	Minimum # 4
Riddle	No. 25 or No. 1
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No 5 buckwheat
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.

5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Handpick large whole kernels of rye from the portion passing over the riddle and return them to the cleaned sample.
10. Determine dockage. Use the list under *Composition of dockage.*

Composition of dockage

Dockage includes

- Rye with long sprouts removed by the riddle.
- For samples of rye which are graded *Rye Sample CW/CE Account Sprouted* any rye with long sprouts that was removed by the riddle will be returned to the sample and not assessed as dockage (See *Sprouted)*
- Material other than rye removed by the riddle
- Material removed by aspiration
- Material that passes through the bottom No. 5 buckwheat Carter sieve
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

Procedures are summarized in the table which follows.

1. After the cleaning assessment has been completed, sieve the sample using the No. 6 buckwheat hand sieve.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Rye

Material to be removed	Equipment	Effect on composition of dockage
Broken kernels	No. 6 buckwheat hand sieve	If the weight of broken kernels is over the grade tolerance but is • Less than 5% of the gross weight, add to dockage • 5% or more of the gross weight, broken kernels become a grading factor. Return them to the cleaned sample. See *Broken kernels*

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of rye.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Rye, No. l Canada Western
   4. 0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of rye for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Broken	25 g	100 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Fusarium damage	10 g	100 g
Heated	50 g	250 g
Matter other than cereal grains	50 g	250 g
Odour	working sample	working sample
Other cereal grains, excluding wheat	50 g	250 g
Sclerotinia sclerotiorum	500 g	working sample
Smudge	working sample	working sample
Soft earth pellets	working sample	working sample
Sprouted	10 g	50 g
Stones	250 g	working sample
Treated seeds	working sample	working sample
Wheat	50 g	250 g

Grading factors

Images available on web version

Broken (BKN)

Broken kernels are pieces of rye that are less than three-quarters of a whole kernel.

- If the broken kernel has been chewed by insects, it is also considered as broken for grading purposes as long as no mould is evident on the exposed endosperm.
- If the broken kernel has mould on exposed endosperm, it is graded relative to the degree of soundness.

Procedures

- In samples graded *Rye, Sample CW/CE Account Broken Grain* or *Rye, Sample Broken Grain,* handpick any broken rye removed in cleaning but remaining on top of the No. 4.5 round-hole hand sieve. Return it to the cleaned sample.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical

substance other than fertilizer pellets, the sample shall be graded *Rye, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.

Samples deemed to be contaminated are graded: *Rye, Sample Condemned*.

Degermed kernels (DGM)

Degermed kernels

- Are considered *Sprouted* if the sample contains other sprouted kernels
- Are considered sound if the sample contains no other sprouted kernels

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Rye, Held IP Suspect Contaminated Grain*. The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Rye, Sample Condemned*.

Fireburnt kernels (FBNT)

Fireburnt kernels are charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low-weight kernel which crumbles easily under pressure.

Foreign material (FM)

Foreign material in rye includes all material other than whole or broken rye that remains in the sample after the removal of dockage.

Fusarium damage (FUS DMG)

Fusarium-damaged kernels in rye are chalk-like in appearance and frequently have a fibrous growth in the kernel crease. Rye has a shallow crease and therefore the fibrous growth is frequently removed during handling.

Procedures

Separate all kernels showing any evidence of fusarium damage, including any kernels that have a chalk-like appearance. Apply the following guidelines.

Fusarium-damaged kernels includes

- Chalk-like kernels in combination with a fibrous mould
- Chalk-like kernels without the fibrous mould if the mould is present on other chalk-like kernels in the sample

Do not include

- Chalk-like kernels without the fibrous mould if there are no other chalk-like kernels with mould in the sample

Heated kernels (HTD)

Heated kernels are red or orange, and have the odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. Heated rye is not easily detected because of the natural colour variations that occur in sound rye.

Rotted kernels are included in the tolerance for *Heated*.

Heated seeds of other grains are included in the tolerance for *Heated.*

Matter other than cereal grains (MOTCG)

Matter other than cereal grains includes the following material remaining in the cleaned sample:

- Seeds such as ragweed, Tartary buckwheat, rye grass, wild oats
- Non-cereal domestic grains such as canola, flaxseed, corn, peas, buckwheat or lentils

Mineral matter (MIN MAT)

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is …	Then the grade is…
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Rye, Sample CW/CE Account Odour*
A distinct heated odour	*Rye, Sample CW/CE Account Heated*
A distinct fireburnt odour	*Rye, Sample CW/CE Account Fireburnt*

Other cereal grains excluding wheat (OCGXWHT)

Other cereal grains, excluding wheat in rye are barley, triticale, oats and groats, including wild oat groats. For wheat, see *Wheat*.

For grading purposes, spelt and Kamut® are considered as *Other cereal grains* in samples of rye.

Rotted (ROT)

See Heated.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Smudge (SM)

Smudge describes the discolouration caused by disease. The dark kernels often found in rye are similar in appearance to wheat kernels which has been affected by blackpoint or smudge.

Procedures

When grading, consider the incidence and severity of the discolouration. There is no specific numeric tolerance. This factor is considered under *Degree of soundness*, as defined in the primary and export grade determination tables.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Rye, Sample CW/CE Account Admixture.*

Sprouted kernels (SPTD)

Sprouted kernels show definite signs of germination. Degermed kernels are considered sprouted when the sample contains other sprouted kernels. *(See Degermed)*

▲ **Important**: Kernels with long sprouts which clean out over the No. 25 or No. 1 riddle are either

- Included in dockage, as described in *Composition of dockage*
- Returned to the sample and become a grading factor, in samples graded *Rye, Sample CW/CE, Account Sprouted*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Rye, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation, up to 2.5%, are graded *Rye, Sample Canada Eastern Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Rye, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for

Rye, Canada Western

Grade name	Stones %
No. 1 CW	0.03
No. 2 CW	0.03
No. 3 CW	0.06

Basic grade:..... *Rye, No. 2 CW*
Reason for basic grade:..... 1.0 % Sprouted

If the above sample contained	Grade in western Canada
0.05% stones	*Rye, Rejected No. 2 CW Account Stones*
1.0% stones	*Rye, Rejected No. 2 CW Account Stones*
3.0% stones	*Rye, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for

Rye, Canada Eastern

Grade name	Stones %
No. 1 CE	0.03
No. 2 CE	0.03
No. 3 CE	0.06

Basic grade:..... *Rye, No. 2 CE*
Reason for basic grade:..... 1.0 % Sprouted

If the above sample contained	Grade in eastern Canada
0.05% stones	*Rye, No. 3 CE*
1.0% stones	*Rye, Sample CE Account Stones*
3.0% stones	*Rye, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Rye is graded without reference to variety.

Wheat (WHT)

Wheat is considered foreign material in rye.

Primary and export grade determination tables

Rye, Canada Western (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Degree of soundness	Well matured, practically free from weather-damaged kernels	Reasonably well matured, reasonably free from weather-damaged kernels	Excluded from higher grades on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	72 (349)	69 (334)	63 (304)	*Rye, Sample CW Account Light Weight*
Variety	Any variety of rye registered under the *Seeds Act*	Any variety of rye registered under the *Seeds Act*	Any variety of rye	

Rye, Canada Western (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Broken %	4	5	8	50% or less- *Rye, Sample CW Account Broken Grain* Over 50%-*Sample Broken Grain*
Fireburnt %	0.0	0.0	0.0	*Rye, Sample CW Account Fireburnt*
Fusarium %	0.3	0.5	1.0	*Rye, Sample CW Account Fusarium Damage*
Heated %	0.1	0.8	5.0	*Rye, Sample CW Account Heated*
Sprouted %	0.5	2.0	10.0	*Rye, Sample CW Account Sprouted*

Rye, Canada Western (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Cereal grains other than wheat %	2	3	10	See *Mixed grain*
Ergot %	0.05	0.20	0.33	*Rye, Sample CW Account Ergot*
Excreta %	0.01	0.01	0.02	*Rye, Sample CW Account Excreta*
Matter other than cereal grains %	0.5	1.0	2.0	*Rye, Sample CW Account Admixture*
Sclerotinia %	0.05	0.20	0.33	*Rye, Sample CW Account Admixture*
Stones %	0.03	0.03	0.06	2.5% or less - *Rye, Rejected (grade) Account Stones* Over 2.5%-*Rye, Sample Salvage*
Total % Mineral matter including stones	0.07	0.10	0.15	2.5% or less - *Rye, Rejected (grade) Account Stones* Over 2.5%-*Rye, Sample Salvage*
Total % Foreign material	2	5	10	See *Mixed grain*

Rye, Canada Eastern (CE), standard of quality

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Degree of soundness	Well matured, practically free from weather-damaged kernels	Reasonably well matured, reasonably free from weather-damaged kernels	Excluded from higher grades on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	72 (349)	69 (334)	63 (304)	*Rye, Sample CE Account Light Weight*
Variety	Any variety of rye registered under the *Seeds Act*	Any variety of rye registered under the *Seeds Act*	Any variety of rye	

Rye, Canada Eastern (CE), damage

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Broken %	4	5	8	50% or less - *Rye, Sample CE Account Broken Grain* Over 50% - *Sample Broken Grain*
Fireburnt %	0.0	0.0	0.0	*Rye, Sample CE Account Fireburnt*
Fusarium %	0.3	0.5	1.0	*Rye, Sample CE Account Fusarium Damage*
Heated %	0.1	0.8	5.0	*Rye, Sample CE Account Heated*
Sprouted %	0.5	2.0	10.0	*Rye, Sample CE Account Sprouted*

Rye, Canada Eastern (CE), foreign material

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Cereal grains other than wheat %	2	3	10	See *Mixed grain*
Ergot %	0.05	0.20	0.33	*Rye, Sample CE Account Ergot*
Excreta %	0.01	0.01	0.02	*Rye, Sample CE Account Excreta*
Matter other than cereal grains %	0.5	1.0	2.0	*Rye, Sample CE Account Admixture*
Sclerotinia %	0.05	0.20	0.33	*Rye, Sample CE Account Admixture*
Stones %	0.03	0.03	0.06	2.5% or less - *Rye Sample CE Account Stones* Over 2.5% - *Rye, Sample Salvage*
Total % Mineral matter including stones	0.07	0.10	0.15	2.5% or less - *Rye Sample CE Account Stones* Over 2.5% - *Rye, Sample Salvage*
Total % Foreign material	2	5	10	See *Mixed grain*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the table below upon following the *Determination of commercially clean* procedures described in this chapter.

No dockage is reported for samples representing commercially clean rye.

Commercially clean determination table, rye

Grade name	Commercially clean	
	(1) Small seeds %	(2) Total, small seeds, attrition, dust, chaff and roughage %
No. 1 CW	0.05	0.10
No. 2 CW	0.05	0.10
No. 3 CW	0.05	0.10

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Rye on export is graded using the primary and export grade determination tables.

6. Barley

Classes, types and varieties 6-3
Classes 6-3
Malting 6-3
Food 6-3
General purpose 6-3
Types 6-3
Covered 6-3
Hulless 6-3
Two-row barley 6-3
Six-row barley 6-3
Malting Barley Varieties 6-4
Food Barley Varieties 6-4

Determination of commercially clean 6-5

Determination of dockage 6-7
Definitions 6-7
Dockage not reported 6-7
Normal cleaning procedures 6-7
Composition of dockage 6-8
Cleaning for grade improvement 6-9
Optional analysis 6-10

Grading 6-11
Important definitions 6-11
Net weight of sample 6-11
Hazardous substances in samples 6-11
Rounding rules 6-11
Processed sample 6-11
Food Barley 6-11
Malting Barley 6-12
Non-Registered Varieties 6-12
Representative portion for grading 6-13

Grading factors 6-14
Adhered hulls (ADHULLS) 6-14
Barley of other types (BOOT) 6-14
Broken (BKN) 6-14
Contaminated grain 6-14
Covered smut and false loose smut (SMUT) 6-15
Earth pellets (EP) 6-15
Ergot (ERG) 6-15
Excreta (EXCR) 6-16
Extraneous material 6-16
Fertilizer pellets (FERT PLTS) 6-16
Fireburnt (FBNT) 6-16
Frost (FR) 6-16
Fusarium damage (FUS DMG) 6-17
Heated (HTD) 6-17
Inseparable seeds (INSEP SDS) 6-17
Large oil-bearing seeds 6-17

Mildew (MIL) 6-17
Mineral matter (MIN MAT) 6-18
Odour (ODOR) 6-18
Other cereal grains (OCG) 6-18
Peeled and broken (PLD BKN) 6-18
Plump and thin kernels (PLMP, THIN) 6-19
Rotted kernels (ROT KRNL) 6-19
Sclerotinia sclerotiorum (SCL) 6-20
Severely mildewed (SEVMIL) 6-20
Smut (SMUT) 6-20
Soft earth pellets (SEP) 6-20
Sprouted (SPTD) 6-20
Stones (STNS) 6-21
Test weight (TWT) 6-22
Thin kernels (THIN) 6-23
Treated seed and other chemical substances 6-24
Varieties with adhered hulls (VARADHHLS) 6-24
Weathered (WEATH) 6-24
Wild oats (WO) 6-24

Primary and export grade determination tables 6-25
Barley, Canada Western Malting (CW), standard of quality 6-25
Barley, Canada Western Malting (CW), damage 6-25
Barley, Canada Western Malting (CW), foreign material 6-25
Barley, Canada Western Food (CW), standard of quality 6-26
Barley, Canada Western Food (CW), Damage 6-26
Barley, Canada Western Food (CW), foreign material 6-26
Barley, Canada Western General Purpose (CW), standard of quality 6-27
Barley, Canada Western General Purpose (CW), damage 6-27
Barley, Canada Western General Purpose (CW), foreign material 6-27
Barley, Canada Eastern Malting (CE), standard of quality 6-28
Barley, Canada Eastern Malting (CE), damage 6-28
Barley, Canada Eastern Malting (CE), foreign material 6-28
Barley, Canada Eastern Food (CE), standard of quality 6-29
Barley, Canada Eastern Food (CE), Damage 6-29
Barley, Canada Eastern Food (CE), foreign material 6-29
Barley, Canada Eastern General Purpose (CE), standard of quality 6-30
Barley, Canada Eastern General Purpose (CE), damage 6-30
Barley, Canada Eastern General Purpose (CE), foreign material 6-31

Export shipments 6-32
Commercially clean (CCLN) 6-32
Not commercially clean (NCC) 6-32
Grading 6-32

Classes, types and varieties

Classes

Barley is divided into three classes based on end use, malting, food and general purpose.

Malting

Only the varieties on the malting barley variety designation list are eligible for the malting grades. Only about 20 percent of malting barley production is actually *selected* for malting each year. The other 80 percent is used domestically as livestock feed, exported as feed barley or may be selected for food grade.

There is one malting grade *Select*. Malting barley may be covered or hulless varieties. Barley selected for malting that does not qualify for this grade is graded *Barley, Sample Select CW/CE, Two-row/Six-row Account "Factor"*.

Food

Only the varieties on the food barley variety designation list are eligible for the food grades. There is a growing interest from food processors for barley in food products. Some examples of food uses are ready-to-eat breakfast cereals, rice like products (after splitting and polishing), thickeners, health foods, tea, etc.

General purpose

General purpose grades include covered and hulless barley not selected for malting or food. General purpose barley is used primarily for animal feed.

Types

Covered

The term covered refers to varieties of barley with the outer hull still attached after harvesting. Covered barley varieties may be two-row or six-row.

Hulless

The term hulless refers to varieties of barley in which the outer hull is loosely adhered to the kernel. The outer hull is so loose, that when this barley is harvested in the field, the outer hull is usually removed. Processors often refer to this type of barley as "naked" barley. Hulless barley varieties may be two-row or six-row.

Two-row barley

A head of two-row barley contains two rows of kernels along its length.

Six-row barley

A head of six-row barley contains six rows of kernels along its length, in two groups of three kernels each.

Malting Barley Varieties

Class name	Variety (from the Regulations)
Barley, Canada Eastern Malting, Six-row	Any selected variety of the class Barley, Canada Eastern Malting Six-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Eastern Malting Six-row Hulless	Any selected variety of the class Barley, Canada Eastern Malting Six-row Hulless designated as such by Order of the Canadian Grain Commission
Barley, Canada Eastern Malting, Two-row	Any selected variety of the class Barley, Canada Eastern Malting Two-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Eastern Malting, Two-row Hulless	Any selected variety of the class Barley, Canada Eastern Malting Two-row Hulless designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Malting, Six-row	Any selected variety of the class Barley, Canada Western Malting Six-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Malting, Six-row Hulless	Any selected variety of the class Barley, Canada Western Malting Six-row Hulless designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Malting, Two-row	Any selected variety of the class Barley, Canada Western Malting Two-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Malting, Two-row Hulless	Any selected variety of the class Barley, Canada Western Malting Two-row Hulless designated as such by Order of the Canadian Grain Commission

Food Barley Varieties

Class name	Variety (from the Regulations)
Barley, Canada Eastern Food, Two-row	Any selected variety of the class Barley, Canada Eastern Food Two-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Eastern Food, Two-row Hulless	Any selected variety of the class Barley, Canada Eastern Food Two-row Hulless designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Food, Two-row	Any selected variety of the class Barley, Canada Western Food Two-row designated as such by Order of the Canadian Grain Commission
Barley, Canada Western Food, Two-row Hulless	Any selected variety of the class Barley, Canada Western Food Two-row Hulless designated as such by Order of the Canadian Grain Commission

Determination of commercially clean

Dockage is not assessed on barley samples that meet the commercially clean specifications defined in the commercially clean determination table. The table is found in the Export shipments section of this chapter. All samples must be analyzed to determine if they are commercially clean prior to dockage assessment. The analysis of samples that are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.1% of small seeds without passing the sample over the Carter dockage tester as set up below and weighing the small seeds, then primary dockage assessment procedures can be followed. Where there is any doubt regarding whether the sample is commercially clean, the sample must be analysed using the procedures outlined in steps 1 through 7 below to confirm that the sample is not commercially clean prior to assessing a dockage.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
2. Pass the sample over the Carter dockage tester set up as follows:

Feed control	# 5
Air control	# 3
Riddle	None
Top sieve	No. 4.5 round-hole
Centre sieve	Blank tray
Bottom sieve	None
Sieve cleaner control	Off

3. Small seeds passing through the No. 4.5 round-hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #1 in the commercially clean determination table)
4. The sample portion passing over the 4.5 round-hole sieve is divided using a Boerner-type divider to a representative portion of not less than 250 grams
5. The portion divided from step 4 is handpicked to remove roughage (as defined in the *Glossary*)
6. Roughage is weighed and the percentage is calculated
7. All material passing through the No. 4.5 round-hole sieve is combined with dust and chaff removed by aspiration and handpicked roughage material are added together to determine if they meet the commercially clean specification of the grade for Total small seeds, attrition, dust, chaff and roughage. (Column #2 in the commercially clean determination table)

Should the percentage concentration of either of the factors determined in steps 1 through 7 exceed the specifications set out in columns 1 or 2 of the commercially clean determination table, the sample will be considered to be not commercially clean. Dockage will be assessed on samples determined to be not commercially clean by following the procedures defined under *Determination of dockage.*

Determination of dockage

Definitions

Dockage is assessed to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- *Barley, Sample CW/CE, Account Fireburnt*
- *Barley, Sample Salvage*
- *Barley, Sample Condemned*
- *Unofficial samples declared as processed*

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 5
Air control	# 6
Riddle	No. 6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	Blank tray
Sieve cleaner	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for 2 to 3 seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

   ▲ **Important:** These are the normal settings. Ensure when you aspirate general purpose barley that you do not remove light weight barley from the sample.

   If the aspirated material contains lightweight barley,

   1. Return the material to the sample.
   2. Reset the Carter dockage tester with a lower air setting to remove only lightweight dockage material.
   3. Pass it through the Carter dockage tester again.
8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material other than barley removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that is removed by the No. 5 buckwheat Carter sieve
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement—Barley* for the list of equipment.
2. Sieve the sample by hand, or pass it through the Carter dockage tester, depending on the material.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Barley

Class	Material to be removed	Equipment	Effect on composition of dockage
All classes	**Large seeds**	No. 6 buckwheat hand sieve	Large seeds are • Seeds that do not pass through the No. 4.5 round-hole sieve • Grains other than cereal grains, such as peas, beans, corn flaxseed and domestic buckwheat • Ragweed and Tartary buckwheat Assess material as dockage, provided the grade is improved and not more than 5.0% of barley is removed.
All Classes	**Covered smut and false loose smut**	Carter dockage tester, set up for *Normal cleaning procedures,* with air control set to 7 **Note:** The material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	If the percentage by weight of material removed is • Less than 2.0% of the gross weight of the sample, add to dockage • 2.0% or more of the gross weight of the sample, the sample is sent to the Chief Grain Inspector for review
All Classes	**Attached awns**	Hand rub barley, Carter dockage tester for aspiration	Removes awns Separates detached awns from working sample. Awns removed to be included in dockage.
Hulless type only	**Wild oats, shrunken barley and rye grass**	No. 9x9 wire hand sieve	For the select hulless grades, wild oats, shrunken barley and rye grass removed in the cleaning procedure is included in dockage.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of barley.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

     Example
     95.0% Barley, No. 1 Canada Western
     4.0% Domestic Mustard Seed, No. 1 Canada Oriental
     1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Food Barley

The selection of barley for food purposes is the responsibility of selecting companies. Each individual company has their own selection criteria and specifications. All barley selected for food purposes will be graded according to the specification lists in the Barley CW / CE Food primary grade determination tables.

Malting Barley

The selection of barley for malting purposes is the responsibility of selecting companies. Each individual company has their own selection criteria and specifications. All barley selected for malting purposes will be graded according to the specification lists in the Barley CW / CE malting primary grade determination tables.

Producer Deliveries

Once barley has been selected for malting purposes, if there is a disagreement on the assessment of any factors listed in the "Characteristics of Malt Barley" table, the CGC, upon request will perform an analysis of the disputed factor. A representative portion of not less than 1000 grams of the unload will be forwarded to the CGC along with a request in writing (form I-106 in western Canada or I-107 for eastern Canada) specifying which factors are to be analyzed.

Characteristics of Malt Barley	
Peeled and Broken	Other cereal grains
Sprouted	Wild oats
Barley of other types	Total Foreign Material
Plump and Thin	Protein

Note: Specific tolerances are set by the selecting company.

Non-Registered Varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of barley for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Adhered hulls	50 g	100 g
Barley of other types	10 g	10 g
Broken	25 g	50 g
Covered smut and false loose smut	working sample	working sample
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	500 g	working sample
Frost	25 g	100 g
Fusarium damage	25 g	100 g
Heated	25 g	100 g
Inseparable seeds — malting and food	100 g	250 g
Inseparable seeds — general purpose	100 g	250 g
Odour	working sample	working sample
Other cereal grains	50 g	250 g
Peeled and broken	50 g	100 g
Plump and thin	250 g	250 g
Rotted kernels	50 g	working sample
Sclerotinia sclerotiorum	500 g	working sample
Severe mildew	50 g	working sample
Soft earth pellets	working sample	working sample
Sprouted	25 g	100 g
Stones	working sample	working sample
Treated seed	working sample	working sample
Varieties with adhered hulls	50 g	100 g
Weathered	working sample	working sample
Wild oats	50 g	250 g

Grading factors

Images available on web version

Adhered hulls (ADHULLS)

Adhered hulls are kernels of hulless varieties with hulls that have not been removed during harvesting. See *Varieties with adhered hulls.*

Barley of other types (BOOT)

In two-row barley, barley of other types is any six-row variety. In six-row barley, barley of other types is any two-row variety.

Broken (BKN)

Broken kernels are pieces that are less than three-quarters of a whole kernel and kernels with the germ end broken off.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Barley, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.

Samples deemed to be contaminated are graded: *Barley, Sample Condemned*.

Covered smut and false loose smut (SMUT)

There are no specific numeric tolerances for smut. In evaluating smut as a grading factor, consider

- The degree of smut tag on the kernels
- The number of pieces of covered smut left in the cleaned sample

If the sample . . .	Then the grade is . .		
	Malting	**Food**	**General purpose**
Contains about 5K of covered smut and no tagged kernels	*Barley, Select Malting CW/CE Two-row/Six-row*	*Barley, Select Food CW/CE Two-row/Six-row*	*Barley, No. 1 CW/CE*
Contains many pieces of covered smut and smut-tagged kernels	*Barley, Sample Select Malting CW/CE Two-row/Six-row, Account Smut*	*Barley, Sample Select Food CW/CE Two-row/Six-row Account Smut*	*Barley, No. 2 CW/CE*
Is severely contaminated	*Barley, Sample Select Malting CW/CE Two-row/Six-row, Account Smut*	*Barley, Sample Select Food CW/CE Two-row/Six-row Account Smut*	*Barley, Sample CW/CE, Account Smut*
	Note: If hulless grades, add “Hulless” to the grade name		

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
- See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Barley, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Barley, Sample Condemned.*

Fireburnt (FBNT)

Fireburnt kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Frost (FR)

For varieties with hulls—frost-damaged kernels have distinctly indented backs, and usually a loose hull. Kernels with a light wrinkling from frost are not considered frost-damaged.

For hulless varieties—frost-damaged kernels have severe wrinkling and translucent endosperms.

▲ **Important:** Determine frost-damaged kernels and *Peeled and broken* prior to sizing the sample. Sizing tends to peel kernels.

Procedures—Malting and food grades

1. Use a representative portion of at least 25 grams of the cleaned sample.
2. Determine the percentage of frost-damaged kernels.

Fusarium damage (FUS DMG)

Fusarium-damaged kernels of barley are discoloured by pink, orange or black encrustations of fusarium mould. Under magnification, the black encrustations appear raised above the surface of the kernel and are surrounded by a white mould. The black encrustations can be scraped off.

Some degree of judgment is required when identifying kernels with the fusarium mould. Only those kernels which meet this description are to be designated as fusarium damaged.

Procedures

Confirm the presence of fusarium mould using a 10-power magnifying lens.

Heated (HTD)

Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. The hull over the germ of the heated kernels often appears discoloured, usually to a golden brown.

Procedures

- A representative portion of the cleaned sample is passed through a barley pearler for up to 10 seconds. When the hull is removed by pearling the germ appears red or brown. As the degree of heat damage increases, a greater portion of the pearled kernel exhibits the red discolouration.
- Heated seeds of other grains are included in the tolerance for *Heated.*

Inseparable seeds (INSEP SDS)

Inseparable seeds are those not removed by the cleaning process, usually large seeds including grains other than cereal grains, such as peas, beans, corn, flaxseed and domestic buckwheat.

Procedures

- Assess as dockage if they are removed by *Cleaning for grade improvement.*
- Malting grades may not contain any large oil-bearing seeds such as sunflower seeds, safflower seeds or soybeans.

Large oil-bearing seeds

Large oil-bearing seeds are special crop seeds that may be crushed for oil. They may include sunflower, safflower or soybeans.

Mildew (MIL)

Mildew is a fungal condition that develops in unthreshed grain usually under conditions of excessive moisture. The affected kernels are grayish in colour and lower in quality. In the evaluation of mildew, consider the number of affected kernels and their severity. See *Severe mildew*.

Mineral matter (MIN MAT)

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
A distinct, objectionable odour, not associated with the quality of the grain, but not heated or fireburnt	*Barley, Sample Select Malting CW/CE Two-row/Six-row Account Odour* *Barley, Sample Select Food CW/CE Account Odour* *Barley, Sample CW/CE Account Odour*
A distinct, heated odour	*Barley, Sample Select Malting CW/CE Two-row/Six-row Account Heated* *Barley, Sample Select Food CW/CE Account Heated* *Barley, Sample CW/CE Account Heated*
A distinct, fireburnt odour	*Barley, Sample Select Malting CW/CE Two-row/Six-row Account Fireburnt* *Barley, Sample Select Food CW/CE Account Fireburnt* *Barley, Sample CW/CE Account Fireburnt*
	Note: If hulless grade add "Hulless" to the grade name

Other cereal grains (OCG)

Other cereal grains include wheat, rye, oats or triticale remaining in the cleaned sample. For grading purposes, spelt and Kamut® are considered as *Other cereal grains* in samples of barley.

Peeled and broken (PLD BKN)

Peeled kernels are kernels with at least one of the following characteristics:

- One-third or more of the hull is removed, including kernels of hulless barley
- The germ is fully exposed
- The hull is badly frayed or ruptured over the germ end without evidence of germination
- The hull is removed along both edges.

Broken kernels are pieces of kernels that are less than three-quarters of a whole kernel and kernels with the germ end broken off.

▲ **Important:** Determine peeled and broken and frost-damaged kernels prior to sizing the sample. Sizing tends to peel kernels.

Plump and thin kernels (PLMP, THIN)

The process for determining plump and thin kernels is called sizing.

- Plump kernels are kernels that remain on top of or lodged in the No. 6 slotted sieve.
- Thin kernels are kernels that pass through the No. 5 slotted sieve.
- These are a characteristic of malting barley.

▲ **Important:** Determine frost-damaged kernels and peeled and broken prior to sizing the sample. Sizing tends to peel kernels.

Procedures

1. Using a Boerner-type divider, divide a representative portion of not less than 250 grams from the cleaned sample.
2. Set the Carter dockage tester as follows:

Feed control	# 5
Air control	Off
Riddle	None
Top sieve	No. 6 slotted
Centre sieve	No. 5 slotted
Bottom sieve	Blank tray
Sieve cleaner control	Off

3. Pass the representative portion through the Carter dockage tester once.
4. When most of the sample has passed over the sieves, turn on the sieve cleaner control for five kicks of the machine to loosen lodged kernels.

   ▲ **Important:** Do not rap sieves in the machine to loosen lodged kernels.

5. Remove each sieve carefully from the machine.
6. Remove lodged kernels from each sieve. Add them to the barley that passed over that sieve.
7. Weigh separately
   - Plump kernels on top of or lodged in No. 6 slotted sieve
   - Thin kernels that passed through the No. 5 slotted sieve

Rotted kernels (ROT KRNL)

Rotted kernels are discoloured, swollen, soft and spongy as a result of decomposition by fungi or bacteria. Consider rotted kernels in combination with severely mildewed and heated.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Severely mildewed (SEVMIL)

Severe mildew refers to kernels that are severely blackened by mildew. See *Mildew*. Consider severe mildew in combination with rotted and heated kernels.

Smut (SMUT)

See Covered smut and false loose smut.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones.*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Barley, Sample CW/CE Account Admixture.*

Sprouted (SPTD)

Sprouted kernels show definite signs of germination.

Food, general purpose and hulless grades

Analyse without pearling.

Procedures for malting grades (covered barley only)

1. Select a representative portion of not less than 25 grams.
2. Pass the sample through the pearler for two or three seconds.
3. Analyse the lightly pearled sample for evidence of germination.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Barley, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation, up to 2.5%, are graded *Barley, Sample Canada Eastern Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Barley, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Barley, CW General Purpose

Grade name	Stones %
No. 2 CW	0.15

Basic grade:..... *Barley, No. 2 CW*
Reason for basic grade:..... Stained

If the above sample contained	Grade in western Canada
0.5% stones	*Barley, Rejected No. 2 CW Account Stones*
3.0% stones	*Barley, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Barley, CE General Purpose

Grade name	Stones %
No. 2 CE	0.15

Basic grade:..... *Barley, No. 2 CE*
Reason for basic grade:..... Stained

If the above sample contained	Grade in eastern Canada
0.5% stones	*Barley, Sample CE Account Stones*
3.0% stones	*Barley, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.
If a barley sample contains kernels with attached awns that reduce the test weight and affect the grade, see procedures for *Cleaning for grade improvement.*

Thin kernels (THIN)

The process of determining the percentage by weight of thin kernels is called sizing. For sizing of malting barley, see *Plump and thin kernels*.

Thin kernels are kernels that pass through the No. 5 slotted sieve. These are a characteristic of malting barley.

▲ **Important:** Determine frost-damaged kernels and peeled and broken first. Then size the sample. Sizing tends to peel kernels.

For hulless grades only—the general appearance of the sample and factors other than size are taken into account in grading. Samples scant in sizing requirements but otherwise sound are given the benefit of the doubt in grading.

Procedures

1. Obtain a representative portion of not less than 250 grams of the cleaned sample.
2. Set up the Carter dockage tester as follows:

Feed control	# 5
Air control	Off
Riddle	None
Top sieve	None
Centre sieve	No. 5 slotted
Bottom sieve	Blank tray
Sieve cleaner control	Off

3. Run the representative portion through the Carter dockage tester once.
4. When the bulk of the sample has passed over the sieves, turn on the sieve cleaner control for only five kicks of the machine to loosen lodged kernels.

   ▲ **Important:** Do not rap sieves in the machine to loosen lodged kernels.

5. Weigh thin kernels that pass through the No. 5 slotted sieve

Treated seed and other chemical substances

See Contaminated grain.

Varieties with adhered hulls (VARADHHLS)

For select food hulless barley—varieties with adhered hulls are considered as *Other cereal grains.*

For general purpose hulless barley—varieties with adhered hulls are any kernels of non-hulless varieties.

Weathered (WEATH)

Weathered kernels are discoloured by weathering to a very deep yellow or light brown. Severely weathered kernels are severely discoloured. They may be dark brown, heavily stained or distinctly bleached and may also be mildewed. Consider the number of affected kernels and their condition when you assess the general colour of the sample.

Wild oats (WO)

Wild oats is an annual grassy weed. The seeds vary in colour from white to black. They are normally more slender than domestic oats, and have a slanting, circular depressed scar, sometimes called a sucker mouth, at the base, and a bent twisted awn.

Primary and export grade determination tables

Barley, Canada Western Malting (CW), standard of quality

Grading factor	Select Malting CW Two-row	Select Malting CW Six-row	Select Malting CW Two-row Hulless	Select Malting CW Six-row Hulless	Grade, if specs for Select Malting CW Two-row / Six-row (Hulless) not met
Variety	Any selected variety of the class Barley, Canada Western Malting Two-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Malting Six-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Malting Two-row Hulless designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Malting Six-row Hulless designated as such by Order of the Commission	Non designated varieties which are selected for malting purposes are only eligible for the grade *Barley, Sample Select Malting CW Two-row/Six-row (Hulless) Account Variety*
Adhered Hulls %	Not applicable	Not applicable	5	*5*	Barley Sample Select Malting CW Two-row / six-row Account Adhered Hulls

Note: Barley not selected for malting will be graded according to "General Purpose" grades.
Note: If specs for Select CW Hulless grade not met add "Hulless" to Sample grade name

Barley, Canada Western Malting (CW), damage

Grading factor	Select Malting CW Two-row	Select Malting CW Six-row	Select Malting CW Two-row Hulless	Select Malting CW Six-row Hulless	Grade, if specs for Select Malting CW Two-row / Six-row (Hulless) not met
Fireburnt %	0.0	0.0	0.0	0.0	Barley Sample Select Malting CW Two-row / six-row Account Fireburnt
Frost %	2.0	2.0	2.0	2.0	Barley Sample Select Malting CW Two-row / six-row Account Frost
Fusarium %	0.2	0.2	0.2	0.2	Barley Sample Select Malting CW Two-row / six-row Account Fusarium Damage
Heated %	0.1	0.1	0.1	0.1	Barley Sample Select Malting CW Two-row / six-row Account Heated
Rotted Severely Mildewed %	0.0	0.0	0.0	0.0	Barley Sample Select Malting CW Two-row / six-row Account Rotted, Severely Mildewed

Barley, Canada Western Malting (CW), foreign material

Grading factor	Select Malting CW Two-row	Select Malting CW Six-row	Select Malting CW Two-row Hulless	Select Malting CW Six-row Hulless	Grade, if specs for Select Malting CW Two-row / Six-row (Hulless) not met
Ergot %	0.02	0.02	0.02	0.02	Barley Sample Select Malting CW Two-row / six-row Account Admixture
Excreta %	0.01	0.01	0.01	0.01	Barley Sample Select Malting CW Two-row / six-row Account Excreta
Sclerotinia %	0.02	0.02	0.02	0.02	Barley Sample Select Malting CW Two-row / six-row Account Admixture
Stones %	0.02	0.02	0.02	0.02	2.5% or less – *Barley, Rejected CW Account Stones* *Over 2.5%- Barley, Sample Salvage*
Inseparable seeds %	0.2	0.2	0.2	0.2	Barley Sample Select Malting CW Two-row / six-row Account Admixture
Large oil-bearing seeds %	Nil	Nil	Nil	Nil	Barley Sample Select Malting CW Two-row / six-row Account Admixture

Barley, Canada Western Food (CW), standard of quality

Grading factor	Select Food CW Two-row	Select Food CW Six-row	Select Food CW Two-row Hulless	Select Food CW Six-row Hulless	Grade, if Select Food specs not met
Variety	Any selected variety of the class Barley, Canada Western Food Two-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Food Six-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Food Two-row Hulless designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Western Food Six-row Hulless designated as such by Order of the Commission	Non designated varieties which are selected for malting purposes are only eligible for the grade *Barley, Sample Select Food CW Two-row/Six-row (Hulless) Account Variety*
Varieties with adhered hulls %	Not applicable	Not applicable	Considered as other cereal grains	Considered as other cereal grains	50% or less – B*arley, Sample Select Food CW Account Adhered Hulls*
Other hulless varieties %	Not applicable	Not applicable	5	*5*	
Total% Adhered hulls	Not applicable	Not applicable	5	*5*	*Barley, Sample Select Food CW Account Adhered Hulls*

Note: Barley not selected for food will be graded according to "General Purpose" grades.
Note: If specs for Food CW Hulless grade not met add "Hulless" to Sample grade name

Barley, Canada Western Food (CW), Damage

Grading factor	Select Food CW Two-row	Select Food CW Six-row	Select Food CW Two-row Hulless	Select Food CW Six-row Hulless	Grade, if Select Food specs not met
Broken %	4	4	4	4	*Barley, Sample Select Food CW Broken Grain*
Fireburnt %	0.0	0.0	0.0	0.0	*Barley, Sample Select Food CW Account Fireburnt*
Frost %	2	2	2	*2*	*Barley, Sample Select Food CW Account Frost*
Fusarium %	0.5	0.5	0.5	0.5	Barley, Sample Select Food CW Account Fusarium
Heated, rotted, severely mildewed %	0.2	0.2	0.2	0.2	*Barley, Sample Select Food CW Account Heated*
Sprouted %	Not applicable	Not applicable	0.5	0.5	*Barley, Sample Select Food CW Account Sprouted*

Barley, Canada Western Food (CW), foreign material

Grading factor	Select Food CW Two-row	Select Food CW Six-row	Select Food CW Two-row Hulless	Select Food CW Six-row Hulless	Grade, if Select Food specs not met
Ergot %	0.02	0.02	0.02	0.02	*Barley, Sample Select Food CW Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Barley, Sample Select Food CW Account Excreta*
Inseparable seeds %	0.2	0.2	0.2	0.2	*Barley, Sample Select Food CW Account Admixture*
Other cereal grains %	2.0	2.0	2.0	2.0	50% or less – *Mixed Grain, CW Barley*
Sclerotinia %	0.02	0.02	0.02	0.02	*Barley, Sample Select Food CW Account Admixture*
Stones %	0.02	0.02	0.02	0.02	2.5% or less – *Barley, Rejected CW Account Stones* *Over 2.5%- Barley, Sample Salvage*
Total % Foreign material	2	2	2	2	50% or less – *Mixed Grain, CW Barley*

Barley, Canada Western General Purpose (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No.1 CW Hulless	No. 2 CW Hulless	Grade, if No. 2 specs not met
Degree of soundness	Reasonably sweet, may be frost-damaged, weather-stained or otherwise damaged	Fairly sweet, excluded from other grades of barley on account of immature or severely damaged kernels	Reasonably sweet, may be frost-damaged, weather-stained or otherwise damaged	Fairly sweet, excluded from other grades of barley on account of immature or severely damaged kernels	
Minimum test weight kg/hL (g/0.5 l)	63 (303)	57 (274)	72 (352)	65 (314)	*Barley, Sample CW Account Light Weight*
Variety	Any variety of barley registered under the *Seeds Act*	Any variety of barley	Any variety of hulless barley registered under the *Seeds Act*	Any variety of hulless barley	
Varieties with adhered hulls %	Not applicable	Not applicable	10	20	
Other hulless varieties %	Not applicable	Not applicable	No limit	No limit	
Total % Adhered hulls	Not applicable	Not applicable	10	20	

Note: If specs for CW Hulless grade not met add "Hulless" to Sample grade name

Barley, Canada Western General Purpose (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 1 CW Hulless	No. 2 CW Hulless	Grade, if No. 2 specs not met
Broken %	15	25	15	25	*Barley, Sample CW Account Broken*
Fireburnt %	0.0	0.5	0.0	0.5	*Barley, Sample CW Account Fireburnt*
Fusarium %	1.0	1.0	1.0	1.0	*Barley, Sample CW Account Fusarium*
Heated, rotted, severely mildewed %	0.5	2.5	0.5	2.5	*Barley, Sample CW Account Heated*
Sprouted %	10	20	10	20	*Barley, Sample CW Account Sprouted*

Barley, Canada Western General Purpose (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No.1 CW Hulless	No. 2 CW Hulless	Grade, if No. 2 specs not met
Ergot %	0.1	0.1	0.1	0.1	*Barley, Sample CW Account Ergot*
Excreta %	0.02	0.02	0.02	0.02	*Barley, Sample CW Account Excreta*
Inseparable seeds %	0.2	0.2	0.2	0.2	*Barley, Sample CW Account Admixture*
Other cereal grains %	2.5	8.0	2.5	8.0	50% or less – *Mixed Grain CW Barley*
Sclerotinia %	0.1	0.1	0.1	0.1	*Barley, Sample CW Account Admixture*
Stones %	0.15	0.15	0.15	0.15	2.5% or less - *Barley, Rejected CW Account Stones* Over 2.5% - *Barley, Sample Salvage*
Total % Mineral matter including stones	0.25	0.25	0.25	0.25	2.5% or less - *Barley, Rejected CW Account Stones* Over 2.5% - *Barley, Sample Salvage*
Wild oats %	1.0	2.5	1.0	2.5	50% or less - *Mixed Grain CW Barley*
Total % Foreign material	2.5	10.0	2.5	10.0	50% or less - *Mixed Grain CW Barley*

Barley, Canada Eastern Malting (CE), standard of quality

Grading factor	Select Malting CE Two-row	Select Malting CE Six-row	Select Malting CE Two-row Hulless	Select Malting CE Six-row Hulless	Grade, if specs for Select Malting CE Two-row / Six-row (Hulless) not met
Variety	Any selected variety of the class Barley, Canada Eastern Malting Two-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Malting Six-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Malting Two-row Hulless designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Malting Six-row Hulless designated as such by Order of the Commission	Non designated varieties which are selected for malting purposes are only eligible for the grade *Barley, Sample Select Malting CE Two-row/Six-row (Hulless) Account Variety*
Adhered Hulls %	Not applicable	Not applicable	5	*5*	Barley Sample Select Malting CE Two-row / six-row Account Adhered Hulls

Note: Barley not selected for malting will be graded according to "General Purpose" grades.
Note: If specs for Select CE Hulless grade not met add "Hulless" to Sample grade name

Barley, Canada Eastern Malting (CE), damage

Grading factor	Select Malting CE Two-row	Select Malting CE Six-row	Select Malting CE Two-row Hulless	Select Malting CE Six-row Hulless	Grade, if specs for Select Malting CE Two-row / Six-row (Hulless) not met
Fireburnt %	0.0	0.0	0.0	0.0	Barley Sample Select Malting CE Two-row / six-row Account Fireburnt
Frost %	2.0	2.0	2.0	2.0	Barley Sample Select Malting CE Two-row / six-row Account Frost
Fusarium %	0.2	0.2	0.2	0.2	Barley Sample Select Malting CE Two-row / six-row Account Fusarium Damage
Heated %	0.1	0.1	0.1	0.1	Barley Sample Select Malting CE Two-row / six-row Account Heated
Rotted Severely Mildewed %	0.0	0.0	0.0	0.0	Barley Sample Select Malting CE Two-row / six-row Account Rotted, Severely Mildewed

Barley, Canada Eastern Malting (CE), foreign material

Grading factor	Select Malting CE Two-row	Select Malting CE Six-row	Select Malting CE Two-row Hulless	Select Malting CE Six-row Hulless	Grade, if specs for Select Malting CE Two-row / Six-row (Hulless) not met
Ergot %	0.02	0.02	0.02	0.02	Barley Sample Select Malting CE Two-row / six-row Account Admixture
Excreta %	0.01	0.01	0.01	0.01	Barley Sample Select Malting CE Two-row / six-row Account Excreta
Sclerotinia %	0.02	0.02	0.02	0.02	Barley Sample Select Malting CE Two-row / six-row Account Admixture
Stones %	0.02	0.02	0.02	0.02	2.5% or less - *Barley, Sample CE Account Stones* Over 2.5% - *Barley, Sample Salvage*
Inseparable seeds %	0.2	0.2	0.2	0.2	Barley Sample Select Malting CE Two-row / six-row Account Admixture
Large oil-bearing seeds %	Nil	Nil	Nil	Nil	Barley Sample Select Malting CE Two-row / six-row Account Admixture

Barley, Canada Eastern Food (CE), standard of quality

Grading factor	Select Food CE Two-row	Select Food CE Six-row	Select Food CE Two-row Hulless	Select Food CE Six-row Hulless	Grade, if Select Food specs not met
Variety	Any selected variety of the class Barley, Canada Eastern Food Two-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Food Six-row designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Food Two-row Hulless designated as such by Order of the Commission	Any selected variety of the class Barley, Canada Eastern Food Six-row Hulless designated as such by Order of the Commission	Non designated varieties which are selected for Food purposes are only eligible for the grade *Barley, Sample Select Food CE Two-row/Six-row (Hulless) Account Variety*
Varieties with adhered hulls %	Not applicable	Not applicable	Considered as other cereal grains	Considered as other cereal grains	50% or less - B*arley, Sample Select Food CE Account Adhered Hulls*
Other hulless varieties %	Not applicable	Not applicable	5	*5*	
Total% Adhered hulls	Not applicable	Not applicable	5	*5*	*Barley, Sample Select Food CE Account Adhered Hulls*

Note: Barley not selected for food will be graded according to "General Purpose" grades.
Note: If specs for Food CE Hulless grade not met add "Hulless" to Sample grade name

Barley, Canada Eastern Food (CE), Damage

Grading factor	Select Food CE Two-row	Select Food CE Six-row	Select Food CE Two-row Hulless	Select Food CE Six-row Hulless	Grade, if Select Food specs not met
Broken %	4	4	4	4	*Barley, Sample Select Food CE Broken Grain*
Fireburnt %	0.0	0.0	0.0	0.0	*Barley, Sample Select Food CE Account Fireburnt*
Frost %	2	2	2	*2*	*Barley, Sample Select Food CE Account Frost*
Fusarium %	0.5	0.5	0.5	0.5	Barley, Sample Select Food CE Account Fusarium
Heated, rotted, severely mildewed %	0.2	0.2	0.2	0.2	*Barley, Sample Select Food CE Account Heated*
Sprouted %	Not applicable	Not applicable	0.5	0.5	*Barley, Sample Select Food CE Account Sprouted*

Barley, Canada Eastern Food (CE), foreign material

Grading factor	Select Food CE Two-row	Select Food CE Six-row	Select Food CE Two-row Hulless	Select Food CE Six-row Hulless	Grade, if Select Food specs not met
Ergot %	0.02	0.02	0.02	0.02	*Barley, Sample Select Food CE Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Barley, Sample Select Food CE Account Excreta*
Inseparable seeds %	0.2	0.2	0.2	0.2	*Barley, Sample Select Food CE Account Admixture*
Other cereal grains %	2.0	2.0	2.0	2.0	50% or less - *Mixed Grain, CE Barley*
Sclerotinia %	0.02	0.02	0.02	0.02	*Barley, Sample Select Food CE Account Admixture*
Stones %	0.02	0.02	0.02	0.02	2.5% or less – *Barley, Sample CE Account Stones* *Over 2.5%- Barley, Sample Salvage*
Total % Foreign material	2	2	2	2	50% or less – *Mixed Grain, CE Barley*

Barley, Canada Eastern General Purpose (CE), standard of quality

Grading factor	No. 1 CE	No. 2 CE	No.1 CE Hulless	No. 2 CE Hulless	Grade, if No. 2 specs not met
Degree of soundness	Reasonably sweet, may be frost-damaged, weather-stained or otherwise damaged	Fairly sweet, excluded from other grades of barley on account of immature or severely damaged kernels	Reasonably sweet, may be frost-damaged, weather-stained or otherwise damaged	Fairly sweet, excluded from other grades of barley on account of immature or severely damaged kernels	
Minimum test weight kg/hL (g/0.5 l)	60 (288)	54 (260)	72 (352)	65 (314)	*Barley, Sample CE Account Light Weight*
Variety	Any variety of barley registered under the *Seeds Act*	Any variety of barley	Any variety of hulless barley registered under the *Seeds Act*	Any variety of hulless barley	
Varieties with adhered hulls %	Not applicable	Not applicable	10	20	
Other hulless varieties %	Not applicable	Not applicable	No limit	No limit	
Total % Adhered hulls	Not applicable	Not applicable	10	20	

Note: If specs for CE Hulless grade not met add “Hulless” to sample grade name

Barley, Canada Eastern General Purpose (CE), damage

Grading factor	No. 1 CE	No. 2 CE	No. 1 CE Hulless	No. 2 CE Hulless	Grade, if No. 2 specs not met
Broken %	15	25	15	25	*Barley, Sample CE Account Broken*
Fireburnt %	0.0	0.5	0.0	0.5	*Barley, Sample CE Account Fireburnt*
Fusarium %	1.0	1.0	1.0	1.0	*Barley, Sample CE Account Fusarium*
Heated, rotted, severely mildewed %	0.5	2.5	0.5	2.5	*Barley, Sample CE Account Heated*
Sprouted %	10	20	10	20	*Barley, Sample CE Account Sprouted*

Barley, Canada Eastern General Purpose (CE), foreign material

Grading factor	No. 1 CE	No. 2 CE	No.1 CE Hulless	No. 2 CE Hulless	Grade, if No. 2 specs not met
Ergot %	0.1	0.1	0.1	0.1	*Barley, Sample CE Account Ergot*
Excreta %	0.02	0.02	0.02	0.02	*Barley, Sample CE Account Excreta*
Inseparable seeds %	0.2	0.2	0.2	0.2	*Barley, Sample CE Account Admixture*
Other cereal grains %	2.5	8.0	2.5	8.0	50% or less– *Mixed Grain CE Barley*
Sclerotinia %	0.1	0.1	0.1	0.1	*Barley, Sample CE Account Admixture*
Stones %	0.15	0.15	0.15	0.15	2.5% or less - *Barley Sample CE Account Stones* Over 2.5% - *Barley, Sample Salvage*
Total % Mineral matter including stones	0.25	0.25	0.25	0.25	2.5% or less -*Barley, Sample CE Account Stones* Over 2.5% - *Barley, Sample Salvage*
Wild oats %	1.0	2.5	1.0	2.5	50% or less - *Mixed Grain CE Barley*
Total % Foreign material	2.5	10.0	2.5	10.0	50% or less - *Mixed Grain CE Barley*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the table below upon following the *Determination of commercially clean* procedures described in this chapter.

No dockage is reported for samples representing commercially clean barley.

Commercially clean determination table, barley

Grade name	Commercial cleanliness	
	(1) Small seeds %	(2) Total, small seeds, attrition, dust, chaff and roughage %
Select Malting/Food CW two-row	0.1	0.3
Select Malting/Food CW six-row	0.1	0.3

Grade name	Commercial cleanliness	
	(1) Small seeds %	(2) Total, small seeds, attrition, dust, chaff and roughage %
No. 1 CW	0.1	0.3
No. 2 CW	0.1	0.3

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are possible only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Barley on export is graded in accordance with the primary and export grade determination tables.

7. Oats

Determination of commercially clean 7-3

Determination of dockage 7-5
Definitions 7-5
Dockage not reported 7-5
Normal cleaning procedures 7-5
Composition of dockage 7-6
Cleaning for grade improvement 7-6
Optional analysis 7-7

Grading 7-8
Important definitions 7-8
Net weight of sample 7-8
Hazardous substances in samples 7-8
Rounding rules 7-8
Non-registered varieties 7-8
Processed sample 7-8
Standards 7-8
Representative portion for grading 7-9

Grading factors 7-10
Adhered hulls (ADHULLS) 7-10
Barley (BLY) 7-10
Cereal grains other than barley and wheat 7-10
Colour (CLR) 7-10
Contaminated grain 7-10
Covered smut and false loose smut (SMUT) 7-11
Damage (DMG) 7-12
Earth pellets (EP) 7-13
Ergot (ERG) 7-13
Excreta (EXCR) 7-13
Extraneous material 7-13
Fertilizer pellets (FERT PLTS) 7-13
Fireburnt (FBNT) 7-13
Foreign material (FM) 7-13
Frost damage (FR) 7-14
Fusarium damage (FUS DMG) 7-14
Green (GR) 7-14
Heated (HTD) 7-14
Hulled and hulless (HULL) 7-15
Large seeds (LSDS) 7-15
Mildew (MIL) 7-15
Mineral matter (MIN MAT) 7-16
Odour (ODOR) 7-16
Rotted (ROT) 7-16
Sclerotinia sclerotiorum (SCL) 7-16
Soft earth pellets (SEP) 7-16
Sprouted (SPTD) 7-16
Stones (STNS) 7-17
Test weight (TWT) 7-18
Total damage and foreign material (TDMG&FM) 7-19

Treated seed and other chemical substances 7-19
Variety (VAR) 7-19
Wheat (WHT) 7-19
Wild oats (WO) 7-19

Special analyses 7-20
Thins 7-20

Primary and export grade determination tables 7-21
Oats, Canada Western (CW), standard of quality 7-21
Oats, Canada Western (CW), damage 7-21
Oats, Canada Western (CW), foreign material 7-22
Oats, Canada Eastern (CE), standard of quality 7-23
Oats, Canada Eastern (CE), damage 7-23
Oats, Canada Eastern (CE), foreign material 7-24

Export shipments 7-25
Commercially clean (CCLN) 7-25
Not commercially clean (NCC) 7-25
Grading 7-25

Determination of commercially clean

Dockage is not assessed on oat samples that meet the commercially clean specifications defined in the commercially clean determination table. The table is found in the Export shipments section of this chapter. All samples must be analyzed to determine if they are commercially clean prior to dockage assessment. The analysis of samples which are clearly not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.1% of small seeds without hand sieving and weighing the seeds then dockage will be assessed using procedures defined under Determination of dockage. Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures outlined in steps 1 through 7 below to confirm that the sample is not commercially clean prior to assessing a dockage.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
2. Place approximately 250 grams of the sample at a time on the No. 5 buckwheat sieve nested over the No. 4.5 round hole hand sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. All material passing through the No. 4.5 round hole sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for material removable through the No. 4.5 round hole sieve.
   (Column # 1 in the commercially clean determination table)
5. Small seeds passing the No. 4.5 round hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #2 in the commercially clean determination table)
6. Large seeds removable by the No. 5 buckwheat sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for large seeds removable by the No. 5 buckwheat sieve. (Column #3 in the commercially clean determination table) (See definition of large seeds in *Glossary*)
7. The percentages of material through the No. 4.5 round hole sieve and large seeds removable by the No. 5 buckwheat sieve are added together to determine if they meet the commercially clean specification for total removable material. (Column #4 in the commercially clean determination table)

Should the percentage concentration of any of the factors determined in steps 1 through 7 exceed the specifications set out in columns 1 to 4 of the commercially clean determination table the sample will be considered to be not commercially clean. Dockage

will be assessed on samples determined to be not commercially clean by using the procedures defined under *Determination of dockage*.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Oats, Sample CW/CE, Account Fireburnt
- Oats, Sample Salvage
- Oats, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 5
Air control	# 3
Riddle	No. 6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	Blank tray
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.

4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

   ▲ **Important:** These are the normal settings. Ensure when you are aspirating lightweight oats that fully developed, sound oats are not removed from the sample.

   If the aspirated material contains whole, sound oats,
   1. Return the material to the sample.
   2. Reset the dockage tester with a lower air setting to remove only lightweight dockage material.
   3. Pass it through the Carter dockage tester again.

8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that is removed by the No. 5 buckwheat sieve
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement–Oats* for the list of equipment.
2. Sieve the sample by hand, or pass it through the Carter dockage tester, depending on the material.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Oats

Material to be removed	Equipment	Effect on composition of dockage
Large seeds	No. 6 buckwheat hand sieve	Large seeds are • Seeds that do not pass through the No. 4.5 round-hole sieve • Grains other than cereal grains, such as peas, beans, corn, flaxseed and domestic buckwheat • Ragweed and Tartary buckwheat Assess material as dockage, provided the grade is improved and not more than 5.0% of oats are removed.
Covered smut and false loose smut	Carter dockage tester, set up for Normal cleaning procedures, but with air control set to 7 **Note:** The material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	If the percentage by weight of material removed is • Less than 2.0% of the gross weight of the sample, add to dockage • 2.0% or more of the gross weight of the sample, the sample is sent to the Chief Grain Inspector for review.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of oats.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Oats, No. 1 Canada Western
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Recommended portion of oats for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Barley	25 g	100 g
Cereal grains other than barley and wheat	25 g	100 g
Covered smut and false loose smut	working sample	working sample
Damage	10 g	50 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	500 g	working sample
Frost damage	5 g	25 g
Fusarium damage	25 g	100 g
Green	10 g	50 g
Heated	25 g	100 g
Hulled	25 g	100 g
Large seeds	50 g	250 g
Mildew	25 g	50 g
Odour	working sample	working sample
Rotted	25 g	working sample
Sclerotinia sclerotiorum	500 g	working sample
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Thins	250 g	250 g
Treated Seed	working sample	working sample
Wheat	25 g	100 g
Wild oats	25 g	100 g

Grading factors

Images available on web version

Adhered hulls (ADHULLS)

Adhered hulls are kernels of hulless varieties with hulls that have not been removed during harvesting.

Barley (BLY)

There is a separate tolerance for barley in oats.

Cereal grains other than barley and wheat

Cereal grains other than barley and wheat refers to rye and triticale.
For grading purposes, spelt and Kamut® are considered as *Other cereal grains* in samples of oats.

Colour (CLR)

Colour is a component of the degree of soundness, and evaluated using the standards for oats**.**

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or
(b) contaminated within the meaning of the regulations made under section 51 of the Safe Foods for Canadians Act.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Oats, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Oats, Sample Condemned*.

Covered smut and false loose smut (SMUT)

There are no specific numeric tolerances for smut. In evaluating covered smut as a grading factor, consider

- The degree of smut tag on the kernels
- The number of pieces of covered smut left in the cleaned sample

If the sample . . .	Then the grade is . . .
Contains about 5K of covered smut and no tagged kernels	*Oats, No. 1 or No. 2 CW/CE*
Contains many pieces of covered smut and smut-tagged kernels	*Oats, No. 3 CW/CE* or *Oats, No. 4 CW/CE*
Is severely contaminated	*Oats, Sample CW/CE Account Smut*

Damage (DMG)

Kernels are damaged if the groats are fireburnt, heated, frost-damaged, insect damaged, sprouted, mildewed, green, badly weather stained, affected by fusarium or are otherwise damaged.

Weather stained and/or mildewed groats are considered damaged if there is significant brown or black discolouration on 50% or more of the groat or the discolouration penetrates into the groat.

Frost damage is not included in the 4CW/CE total damage, and total damage and foreign material tolerances.

Determination of damage by mechanical hulling

1. Hull a divided representative portion of the clean sample to yield at least 25 grams of groats.
2. Determine the weight of damaged groats as a percentage of hulled groats.

Determination of damage by manual hulling

Use this method only if a mechanical huller is not available. To determine the percentage by weight of damaged kernels,

1. Divide a representative portion of not less than 5 grams from the cleaned sample.
2. Hull all kernels to establish whether the groats are damaged.
3. To accurately determine the percentage by weight of damaged kernels, weigh the affected groat and the oat hull together.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies that have a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Oats, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Oats, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt kernels have been charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel that crumbles easily under pressure.

Foreign material (FM)

Foreign material is anything other than oats that remains in the sample after the removal of dockage. Some types of foreign material have separate tolerances.

Frost damage (FR)

Frost-damaged kernels of oats have a black or sunken ventral side and gray or black groats. Frost-damaged oat groats show discolouration in the ventral crease as a dark line. The discolouration may extend throughout the groats depending on the severity of frost damage. There is no limit for frost damage in Oats, No. 4 CW/CE.

Procedures

Cut the kernels lengthwise through the ventral side and examine the groats to confirm frost damage symptoms.

Fusarium damage (FUS DMG)

Fusarium damage is rare on oats. It resembles fusarium damage in barley. Kernels are discoloured by pink, orange or black encrustations of fusarium mould. Under magnification, the black encrustations appear raised above the surface of the kernel and are surrounded by a white mould. The black encrustations can be scraped off.

Some degree of judgment is required when identifying kernels with the fusarium mould. Only those kernels which meet this description are to be designated as fusarium damaged.

Procedures

Confirm the presence of fusarium damage using a 10-power magnifying lens.

Green (GR)

Green kernels in oats are an indication of immaturity.

- Green hulls are assessed in the general colour of the sample.
- Green groats are considered damaged.

Procedures

Manually or mechanically hull the appropriate portion and examine the groats for green discolouration. Green groats are assessed as damaged. See *Damage*.

Heated (HTD)

Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. When the hull of a heated oat is removed, the groat appears brown or orange-red.

Rotted kernels are included in the tolerance for *Heated*

.

Heated seeds of other grains are included in the tolerance for *Heated.*

Procedures

Manually or mechanically hull the appropriate portion and examine the groats.

If the discolouration affects . . .	The kernel is considered . . .
The entire groat	Heated
Less than the entire groat	Damaged

Hulled and hulless (HULL)

Hulled oats have the hulls removed. Hulless oats have loose hulls which are usually removed during harvesting.

Groats are the oat kernels without the hulls.

If oats contain 75% or more of hulless oats,

- Grade the sample according to the primary and export grade specifications except for the tolerances for hulled and hulless kernels.
- Add *hulless* to the grade name, for example, *Oats, No. 1 CW/CE Hulless*.
- When determining moisture content, use the hulless oats conversion table.

Large seeds (LSDS)

Large seeds are domestic and wild seeds that remain on top of the No. 4.5 round-hole sieve. Large seeds are assessed

- As dockage if they are removed by *Cleaning for grade improvement*
- As large seeds and included in *Total damage and foreign material* if they remain in the sample

Mildew (MIL)

Mildew is a fungal condition that develops in unthreshed grain usually under conditions of excessive moisture. The affected kernels are grayish in colour and lower in quality. In the evaluation of mildew, consider the number of affected kernels and their severity.

- Hull discolouration is assessed in the general colour of the sample.
- Discoloured groats are considered as damaged when there is significant brown or black discolouration on 50% or more of the groat or the discolouration penetrates into the groat.

Procedures

Manually or mechanically hull the appropriate portion and examine the groats for mildew discolouration. Mildewed groats are assessed as damaged. See *Damage*.

If the discolouration is . . .	The sample is considered . . .
On the groats, from mildew	Damaged
On the hull, but groats are undamaged	Superficially mildewed, but sound

Mineral matter (MIN MAT)

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Oats, Sample CW/CE, Account Odour*
A distinct heated odour	*Oats, Sample CW/CE, Account Heated*
A distinct fireburnt odour	*Oats, Sample CW/CE, Account Fireburnt*

Rotted (ROT)

Rotted kernels are discoloured, swollen, and soft and spongy as a result of decomposition by fungi or bacteria. Rotted kernels in oats are considered as heated.
See *Heated*.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Oats, Sample CW/CE Account Admixture.*

Sprouted (SPTD)

Sprouted kernels show definite signs of germination. Sprouted oats are assessed as damaged. See *Damage*.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Oats, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation. up to 2.5%, are graded *Oats, Sample Canada Eastern Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Oats, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Oats, Canada Western

Grade name	Stones %
No. 1 CW	0.02
No. 2 CW	0.07
No. 3 CW	0.15
No. 4 CW	0.15

Basic grade:..... *Oats, No. 1 CW*

If the above sample contained	Grade in western Canada
0.05% stones	*Oats, Rejected No. 1 CW Account Stones*
1.0% stones	*Oats, Rejected No. 1 CW Account Stones*
3.0% stones	*Oats, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Oats, Canada Eastern

Grade name	Stones
No. 1 CE	0.02
No. 2 CE	0.07
No. 3 CE	0.15
No. 4 CE	0.15

Basic grade:..... Oats, No. 1 CE

If the above sample contained	Grade in eastern Canada
0.05% stones	*Oats, No. 2 CE*
1.0% stones	*Oats, Sample CE Account Stones*
3.0% stones	*Oats, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Total damage and foreign material (TDMG&FM)

Total damage and foreign material includes all foreign material and all damage. Frost damage is not included in No. 4 CW/CE Oats. When assigning a grade, choose the most appropriate grade as indicated in the table below.

If any one of, or the total of *Barley or Cereal grains other than wheat and barley* or *Wheat* or *Wild* oats is...	**and *Total damage* is . . .**	**Then the grade is . . .**
Greater than the 4 CW/CE tolerance	Equal to or less than the 4 CW/CE tolerance	See procedures for Mixed grain
Equal to or less than the 4CW/CE tolerance	Greater than the 4 CW/CE tolerance	Oats, Sample CW/CE, Account Damage
Individually, each is less than the 4 CW/CE tolerance, but together they are greater than the 4 CW/CE tolerance for Total damage and Foreign Material		Oats, Sample CW/CE, Account Damage and Foreign Material

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Oats are graded without reference to variety. However, for samples containing 75% or more of hulless oats, *Hulless* forms part of the grade name, and tolerances for *Hulled and hulless* are disregarded.

Wheat (WHT)

There is a separate tolerance for wheat in oats.

Wild oats (WO)

Wild oats is an annual grassy weed. The seeds vary in colour from white to black. They are normally more slender than domestic oats, and have a slanting, circular depressed scar, sometimes called a sucker mouth, at the base, and a bent twisted awn.

Special analyses

Upon request, samples may be analyzed for other factors. The shipper of the oats indicates which factors are to be analyzed and which sieves to use.

Thins

The process for determining thin kernels is called sizing. Thin kernels are kernels that pass through the No. 5 slotted sieve or the sieve specified by the shipper.

Procedures

1. Using a Boerner-type divider, divide a representative portion of not less than 250 grams from the cleaned sample.
2. Set the Carter dockage tester as follows:

Feed control	# 5
Air control	Off
Riddle	None
Top sieve	None
Centre sieve	No. 5 slotted or as specified by the shipper
Bottom sieve	Blank tray
Sieve cleaner control	Off

3. Pass the representative portion through the Carter dockage tester once.
4. When most of the sample has passed over the sieves, turn on the sieve cleaner control for five kicks of the machine to loosen lodged kernels.

   ▲ **Important:** Do not rap sieves in the machine to loosen lodged kernels.
5. Remove each sieve carefully from the machine.
6. Remove lodged kernels from each sieve. Add them to the oats that passed over the sieve.
7. Weigh the kernels that passed through the sieve to determine the percentage of thins.

Primary and export grade determination tables

Oats, Canada Western (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	Grade, if No. 4 specs not met
Degree of soundness	Good colour, 98% sound groats	Good colour, 96% sound groats	Fair colour, 94% sound groats	Poor colour, 92% sound groats	*Oats, Sample CW Account Damage and Foreign Material*
Minimum test weight kg/hL (g/0.5 L)	56 (260)	53 (245)	51 (235)	48 (220)	*Oats, Sample CW Account Light Weight*
Variety	Any variety of oats registered under the *Seeds Act*	Any variety of oats registered under the *Seeds Act*	Any variety of oats registered under the *Seeds Act*	Any variety of oats	
Hulled and Hulless* %	6	8	20	No limit—If sample contains 75% or more of hulless oats, grade as hulless oats	

Note: Samples of Oats, CW will be graded no lower than No. 4 CW account colour
*Hulled and hulless does not apply to Hulless oats. See *Hulled and hulless* definition. Hulless forms part of the grade name, *Oats, 1 CW, Hulless*. Adhered hulls are not a grading factor in Hulless oats.

Oats, Canada Western (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	Grade, if No. 4 specs not met
Fireburnt %	0.0	0.0	0.0	0.2	*Oats, Sample CW Account Fireburnt*
Frost %	0.1	4.0	6.0	No limit. Not included in total damage assessment	
Fusarium %	0.1	2.0	4.0	6.0	*Oats, Sample CW Account Fusarium Damaged*
Heated / Rotted %	0.0	0.1	0.5	1.0	*Oats, Sample CW Account Heated*
Total % Damage	2	4	6	8 excluding frost	*Oats, Sample CW Account Damage*

Oats, Canada Western (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	Grade, if No. 4 specs not met
Barley %	0.8	1.5	3.0	8.0	See *Mixed grain*
Cereal grains other than wheat or barley %	1	2	3	8	See *Mixed grain*
Wheat %	0.8	1.5	3.0	8.0	See *Mixed grain*
Wild oats %	1	2	3	8	50% or less - see *Mixed grain* Over 50% - *Mixed Feed Oats*
Total % Other cereal grains and wild oats	2	4	6	8	See *Mixed grain*
Large seeds %	0.2	0.3	0.5	1.0	*Oats, Sample CW Account Admixture*
Sclerotinia %	0.00	0.05	0.05	0.10	*Oats, Sample CW Account Admixture*
Stones %	0.02	0.07	0.15	0.15	2.5% or less - *Oats, Rejected (grade) Account Stones* Over 2.5% – *Oats, Sample Salvage*
Total % Mineral matter including stones	0.03	0.07	0.25	0.25	2.5% or less - *Oats, Rejected (grade) Account Stones* Over 2.5% - *Oats, Sample Salvage*
Ergot %	0.00	0.03	0.03	0.05	*Oats, Sample CW Account Ergot*
Excreta %	0.01	0.01	0.02	0.02	*Oats, Sample CW Account Excreta*
Total % Damage and foreign material	2	4	6	8 excluding frost	*Oats, Sample CW Account Damage and Foreign Material*

Oats, Canada Eastern (CE), standard of quality

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	Grade, if No. 4 specs not met
Degree of soundness	Good colour, 98% sound groats	Good colour, 96% sound groats	Fair colour, 94% sound groats	Poor colour, 92% sound groats	*Oats, Sample CE Account Damage and Foreign Material*
Minimum test weight kg/hL (g/0.5 L)	51 (235)	49 (225)	46 (210)	43 (195)	*Oats, Sample CE Account Light Weight*
Variety	Any variety of oats registered under the *Seeds Act*	Any variety of oats registered under the *Seeds Act*	Any variety of oats registered under the *Seeds Act*	Any variety of oats	
Hulled and Hulless* %	6	8	20	No limit—If sample contains 75% or more of hulless oats, grade as hulless oats	

Note: Samples of Oats, CE will be graded no lower than No. 4 CE account colour
*Hulled and hulless does not apply to Hulless oats. See *Hulled and hulless* definition. Hulless forms part of the grade name, *Oats, 1 CE, Hulless*. Adhered hulls are not a grading factor in Hulless oats.

Oats, Canada Eastern (CE), damage

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	Grade, if No. 4 specs not met
Fireburnt %	0.0	0.0	0.0	0.2	*Oats, Sample CE Account Fireburnt*
Frost %	0.1	4.0	6.0	No limit. Not included in total damage assessment	
Fusarium %	0.1	2.0	4.0	6.0	*Oats, Sample CE Account Fusarium Damaged*
Heated / Rotted %	0.0	0.1	0.5	1.0	*Oats, Sample CE Account Heated*
Total % Damage	2	4	6	8 excluding frost	*Oats, Sample CE Account Damage*

Oats, Canada Eastern (CE), foreign material

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	Grade, if No. 4 specs not met
Barley %	0.8	1.5	3.0	8.0	See *Mixed grain*
Cereal grains other than wheat or barley %	1	2	3	8	See *Mixed grain*
Wheat %	0.8	1.5	3.0	8.0	See *Mixed grain*
Wild oats %	1	2	3	8	50% or less - see *Mixed grain* Over 50% - *Mixed Feed Oats*
Total % Other cereal grains and wild oats	2	4	6	8	See *Mixed grain*
Large seeds %	0.2	0.3	0.5	1.0	*Oats, Sample CE Account Admixture*
Sclerotinia %	0.00	0.05	0.05	0.10	*Oats, Sample CE Account Admixture*
Stones %	0.02	0.07	0.15	0.15	2.5% or less - *Oats, Sample CE Account Stones* Over 2.5% - *Oats, Sample Salvage*
Total % Mineral matter including stones	0.03	0.07	0.25	0.25	2.5% or less - *Oats, Sample CE Account Stones* Over 2.5% - *Oats, Sample Salvage*
Ergot %	0.00	0.05	0.05	0.10	Oats, Sample CE Account Ergot
Excreta %	0.01	0.01	0.02	0.02	*Oats, Sample CE Account Excreta*
Total % Damage and foreign material	2	4	6	8 excluding frost	*Oats, Sample CE Account Damage and Foreign Material*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the table below upon following the *Determination of commercially clean* procedures described in this chapter.

No dockage is reported for samples representing commercially clean oats.

Commercially clean determination table, oats

Grade name	(1) Total material through No. 4.5 round hole sieve %	(2) Small seeds %	(3) Large seeds through No. 5 buckwheat sieve %	(4) (1) + (3) Total removable material %
No. 1 CW	0.2	0.1	0.2	0.2
No. 2 CW	0.2	0.1	0.2	0.2
No. 3 CW	0.2	0.1	0.2	0.2
No. 4 CW	0.2	0.1	0.2	0.2

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Oats on export are graded using the primary and export grade determination tables.

8. Triticale

Determination of commercially clean 8-3

Determination of dockage 8-5
Definitions 8-5
Dockage not reported 8-5
Normal cleaning procedures 8-5
Composition of dockage 8-6
Cleaning for grade improvement 8-6
Optional analysis 8-7

Grading 8-8
Important definitions 8-8
Net weight of sample 8-8
Hazardous substances in samples 8-8
Rounding rules 8-8
Processed sample 8-8
Non-registered varieties 8-8
Representative portion for grading 8-9

Grading factors 8-10
Blackpoint (BLK PT) 8-10
Broken (BKN) 8-10
Cereal grains other than wheat 8-10
Contaminated grain 8-10
Degermed (DGM) 8-11
Earth pellets (EP) 8-11
Ergot (ERG) 8-11
Excreta (EXCR) 8-11
Extraneous material 8-11
Fertilizer pellets (FERT PLTS) 8-12
Fireburnt (FBNT) 8-12
Foreign material (FM) 8-12
Fusarium damage (FUS DMG) 8-12
Heated (HTD) 8-13
Matter other than cereal grains (MOTCG) 8-13
Mineral matter (MIN MAT) 8-13
Odour (ODOR) 8-13
Sclerotinia sclerotiorum (SCL) 8-13
Smudge (SM) 8-13
Soft earth pellets (SEP) 8-14
Sprouted (SPTD) 8-14
Stones (STNS) 8-14
Test weight (TWT) 8-16
Treated seed and other chemical substances 8-16
Variety (VAR) 8-16

Primary and export grade determination tables 8-17
Triticale, Canada (CAN), standard of quality 8-17
Triticale, Canada (CAN), damage 8-17
Triticale, Canada (CAN), foreign material 8-17

Export shipments **8-18**
Commercially clean (CCLN) 8-18
Not commercially clean (NCC) 8-18
Grading 8-18

Determination of commercially clean

Dockage is not assessed on triticale samples that meet the commercially clean specifications defined in the commercially clean determination table. The table is found in the Export shipments section of this chapter. All samples must be analyzed to determine if they are commercially clean prior to dockage assessment. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.05% of small seeds without hand sieving and weighing the seeds then dockage will be assessed using procedures defined under *Determination of dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures outlined in steps 1 through 7 below to confirm that the sample is not commercially clean prior to assessing a dockage.

Using a Boerner-type divider, divide the sample to obtain a representative portion.

- Official samples shall be at least 1 kg.
- Unofficial samples shall be at least 1 kg.

2. Place approximately 250 grams of the sample at a time on the No. 4.5 round hole hand sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. All material passing through the No. 4.5 round hole sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for material removable through the No. 4.5 round hole sieve.
   (Column #2 in the commercially clean determination table)
5. Small seeds passing through the No. 4.5 round hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #1 in the commercially clean determination table)
6. The sample portions remaining on top of the No. 4.5 are recombined and divided using a Boerner-type divider to a representative portion of not less than 250 grams.
7. The portion divided from step 6 is handpicked to remove roughage material which is weighed and the percentage calculated. Add the roughage percentage to the total obtained in step 4 to determine if it meets the commercially clean specifications of the grade for small seeds, attrition and roughage. (Column #2 in the commercially clean determination table)

   Note: If the roughage material contains unthreshed triticale heads, the heads are squeezed to remove the kernels of triticale prior to weighing. The triticale kernel is not included when assessing the concentration of roughage for commercial cleanliness. However, care should be taken to keep these kernels separate. If it is determined that the sample is “NCC”, kernels squeezed from the unthreshed heads will be included in the dockage.

Should the percentage concentration of either of the factors determined in steps 1 through 7 exceed the specifications set out in columns 1 or 2 of the commercially clean determination table the sample will be considered to be not commercial clean. Dockage will be assessed on samples determined to be not commercially clean by using the procedures defined under *Determination of dockage.*

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by the following cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important**: Dockage is not reported for

- Triticale, Sample Canada Account Fireburnt
- Triticale, Sample Salvage
- Triticale, Sample Canada Account Admixture, where all removable material is similar to the admixture
- Triticale, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 6
Air control	# 5
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	Blank tray
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two or three seconds to remove kernels lodged in the sieve.
6. Turn off the Carter dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Examine the material passing through the No. 5 buckwheat sieve.

   If any significant amount of small whole triticale passed through the No. 5 buckwheat sieve, you must resieve this portion over the No. 5 buckwheat hand sieve. Return any triticale remaining on the sieve to the cleaned sample.
9. Handpick sound large kernels of triticale from the portion passing over the riddle and return them to the cleaned sample. Do not pick kernels with long sprouts. See *Composition of dockage* and *Sprouted.*
10. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Triticale with long sprouts removed by the riddle.
  For samples of triticale which are graded *Triticale Sample CAN Account Sprouted* any triticale with long sprouts that was removed by the riddle will be returned to the sample and not assessed as dockage. (See *Sprouted*)
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material other than triticale removed by the No. 25 riddle
- Material removed by aspiration
- Material that has passed through the No. 5 buckwheat Carter sieve
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, sieve the sample by hand using the appropriate sieve. See the table *Cleaning for grade improvement—Triticale* for the list of sieves.

▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Triticale

Material to be removed	Equipment	Effect on composition of dockage
Broken kernels	No. 6 buckwheat hand sieve	If the weight of broken kernels is over the grade tolerance but is • Less than 5.0% of the gross weight, add to dockage • 5.0% or more of the gross weight, broken kernels becomes a grading factor. Return them to the cleaned sample. See *Broken*.
Stones	No. 6 buckwheat hand sieve	If the weight of wheat removed as a percentage of the gross weight of the sample is • 5.0% or less, assess as dockage • More than 5.0%, see *Stones*, or the relevant grade determination table.
Foreign material	No. 6 buckwheat hand sieve or the No. 9x9 wire hand sieve.	Foreign material includes cockle, wild oats and pin oats.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of triticale.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Triticale, No. 1 Canada
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of triticale for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Broken	25 g	100 g
Cereal grains other than wheat	50 g	250 g
Degermed	10 g	50 g
Ergot	working sample	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Fusarium damage	10 g	100 g
Heated	50 g	250 g
Matter other than cereal grains	100 g	250 g
Odour	working sample	working sample
Sclerotinia sclerotiorum	500 g	working sample
Smudge including blackpoint	50 g	100 g
Soft earth pellets	working sample	working sample
Sprouted	10 g	50 g
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Blackpoint (BLK PT)

Blackpoint kernels have a distinct dark brown or black discolouration of the whole germ and surrounding area. Disregard a slight discolouration restricted to the germ. See *Smudge* and *Smudge, including blackpoint.*

Broken (BKN)

Broken kernels are pieces of triticale that are less than three-quarters of a whole kernel.

Procedures

- In samples graded *Triticale, Sample Broken Grain*, return to the cleaned sample any broken triticale removed in cleaning but remaining on top of the No. 4.5 round-hole hand sieve.
- For reporting and grading, round down the percentage by weight of broken triticale to a whole number.

Cereal grains other than wheat

Cereal grains other than wheat in triticale includes rye, barley, oats, oat groats and wild oat groats.
For grading purposes, spelt and Kamut® are considered as *Other cereal grains* in samples of triticale.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Triticale, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Triticale, Sample Condemned*.

Degermed (DGM)

Degermed kernels

- Are considered *Sprouted* if the sample contains other sprouted kernels
- Are considered sound if the sample contains no other sprouted kernels

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

- Ergot is a plant disease producing elongated fungus bodies having a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Procedures

- Determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Triticale, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Triticale, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Foreign material (FM)

Foreign material in triticale includes all material other than whole or broken triticale that remains in the sample after the removal of dockage. Many of the materials have their own separate tolerances.

Fusarium damage (FUS DMG)

Fusarium-damaged kernels in triticale are typically chalklike in appearance and frequently contain a fibrous growth appearing in the crease of the kernel. Due to the kernel shape, the fibrous growth is often rubbed off some of the kernels.

In assessing fusarium damage in triticale, the following guidelines should be applied:

- Chalklike kernels in a combination with a fibrous mould are fusarium damaged.
- Chalklike kernels without a fibrous mould are fusarium damage if the mould is present in other chalklike kernels in the sample.
- Chalklike kernels without the fibrous mould in samples where there are no other chalklike kernels with mould are not considered fusarium damaged.

Procedures, for severely infested samples

1. Using a Boerner-type divider, divide the representative portion.
2. Separate all kernels showing any evidence of fusarium damage, including any kernels that have a chalk-like appearance.
3. You may examine kernels using a 10-power magnifying lens to confirm evidence of a white or pinkish mould or fibrous growth. In determining fusarium damage, use only kernels with this white or pinkish mould or growth.

Heated (HTD)

Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. Heated triticale is not easily detected because of the natural colour variations that occur in sound triticale. Heated kernels of triticale are red or orange.

Heated seeds of other grains are included in the tolerance for *Heated.*

Matter other than cereal grains (MOTCG)

Matter other than cereal grains is

- Inseparable seeds such a ragweed, Tartary buckwheat, rye grass, wild oats
- Non-cereal domestic grains such as canola, flaxseed, corn, peas, buckwheat and lentils that remain in the cleaned sample.

Mineral matter (MIN MAT)

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Triticale, Sample Canada Account Odour*
A distinct heated odour	*Triticale, Sample Canada Account Heated*
A distinct fireburnt odour	*Triticale, Sample Canada Account Fireburnt*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Smudge (SM)

Smudge is a discolouration on the kernel The discolouration may be brown, black or red. The discolouration is considered smudge if more than one-half the kernel is discoloured or if the discolouration extends into the crease.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones.*
- Any non-toxic material of similar consistency.

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Triticale, Sample CAN Account Admixture.*

Sprouted (SPTD)

Sprouted kernels show definite signs of germination.

▲ **Important**: Kernels with long sprouts which clean out over the No. 25 riddle are either

- Included in the dockage, as described in *Composition of dockage*
- Returned to the sample and become a grading factor, in samples graded *Triticale, Sample Canada Account Sprouted*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

Note: Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement*.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Triticale, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation, up to 2.5%, are graded *Triticale, Sample CAN Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Triticale, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Triticale, Canada

Grade name	Stones %
No. 1 Canada	0.03
No. 2 Canada	0.03
No. 3 Canada	0.07

Basic grade:..... *Triticale, No. 2 Canada*
Reason for basic grade:..... Mildew

If the above sample contained	Grade in western Canada
0.05% stones	*Triticale, Rejected No. 2 Canada Account Stones*
1.0% stones	*Triticale, Rejected No. 2 Canada Account Stones*
3.0% stones	*Triticale, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Triticale, Canada

Grade name	Stones %
No. 1 Canada	0.03
No. 2 Canada	0.03
No. 3 Canada	0.07

Basic grade:..... *Triticale, No. 2 Canada*
Reason for basic grade:..... Mildew

If the above sample contained	Grade in eastern Canada
0.05% stones	*Triticale, No. 3 Canada*
1.0% stones	*Triticale, Sample Canada Account Stones*
3.0% stones	*Triticale, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated Grain.

Variety (VAR)

Triticale is graded without reference to variety.

Primary and export grade determination tables

Triticale, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada
Degree of soundness	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, reasonably free from severely damaged kernels	Reasonably sweet, excluded from higher grades on account of light weight or damaged kernels
Minimum test weight kg/hL (g/0.5 L)*	65 (315)	62 (301)	No minimum
Variety	Any variety of triticale registered under the *Seeds Act*	Any variety of triticale registered under the *Seeds Act*	Any variety of triticale

***** Use wheat test weight conversion table

Triticale, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Broken %	4	7	50	*Sample Broken Grain*
Fireburnt %	0.0	0.0	0.0	*Triticale, Sample Canada Account Fireburnt*
Fusarium %	0.3	0.5	1.0	Triticale, Sample Canada Account Fusarium Damage
Heated %	0.1	0.8	5.0	*Triticale, Sample Canada Account Heated*
Smudge and blackpoint %	10	15	No limit	
Sprouted %	0.5	2.0	10.0	*Triticale, Sample Canada Account Sprouted*

Triticale, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Cereal grains other than wheat %	1	2	3	See *Mixed grain*
Ergot %	0.03	0.05	0.10	*Triticale, Sample Canada Account Ergot*
Excreta %	0.01	0.01	0.03	*Triticale, Sample Canada Account Excreta*
Matter other than cereal grains %	0.5	1.0	2.0	*Triticale, Sample Canada Account Admixture*
Sclerotinia %	0.03	0.05	0.10	*Triticale, Sample Canada Account Admixture*
Stones %	0.03	0.03	0.07	2.5% or less – **West** -*Triticale, Rejected (grade) Account Stones* or **East** - *Triticale, Sample Canada Account Stones,* Over 2.5% - *Triticale, Sample Salvage*
Total % Mineral matter including stones	0.07	0.10	0.15	2.5% or less - **West** -*Triticale, Rejected (grade) Account Stones* or **East** - *Triticale, Sample Canada Account Stones,* Over 2.5% - *Triticale, Sample Salvage*
Total % Foreign material	2.5	4.0	7.0	See *Mixed grain*

Export shipments

Export shipments can be commercially clean or not commercially clean. Dockage is not reported for commercially clean shipments.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the table below upon following the *Determination of commercially clean* procedures described in this chapter.

No dockage is reported for samples representing commercially clean triticale.

Commercially clean determination table, triticale

Grade name	Commercial cleanliness	
	(1) Small seeds %	(2) Total small seeds, attrition, dust, chaff and roughage %
No. 1 Canada	0.05	0.10
No. 2 Canada	0.05	0.10
No. 3 Canada	0.05	0.10

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Triticale on export is graded according to the primary and export grade determination tables

9. Mixed grain

Composition of Mixed Grain **9-2**

Determination of commercially clean **9-3**

Determination of dockage **9-4**
Definitions 9-4
Dockage not reported 9-4
Normal cleaning procedures 9-4
Composition of dockage 9-5
Cleaning for grade improvement 9-5
Optional analysis 9-6

Grading **9-7**
Important definitions 9-7
Net weight of sample 9-7
Hazardous substances in samples 9-7
Processed sample 9-7
Rounding rules 9-7
Representative portion for grading 9-8

Grading factors **9-9**
Broken (BKN) 9-9
Contaminated grain 9-9
Earth pellets (EP) 9-10
Ergot (ERG) 9-10
Excreta (EXCR) 9-10
Extraneous material 9-10
Fertilizer pellets (FERT PLTS) 9-10
Fireburnt (FBNT) 9-10
Heated (HTD) 9-11
Large seeds (LSDS) 9-11
Odour (HTD) 9-11
Sclerotinia sclerotiorum (SCL) 9-11
Soft earth pellets (SEP) 9-11
Stones (STNS) 9-12
Treated seed and other chemical substances 9-14

Primary and export grade determination tables **9-15**
Mixed Grain, Canada Western (CW), composition 9-15
Mixed Grain, Canada Western (CW), damage 9-15
Mixed Grain, Canada Western (CW), foreign material 9-15
Mixed Grain, Canada Eastern (CE), composition 9-16
Mixed Grain, Canada Eastern (CE), damage 9-16
Mixed Grain, Canada Eastern (CE), foreign material 9-16

Export shipments **9-17**
Commercially clean (CCLN) 9-17
Not commercially clean (NCC) 9-17
Grading 9-17

Composition of Mixed Grain

Mixed grain consists of any mixture of wheat, rye, barley, oats, triticale, wild oats and domestic or wild oat groats which is excluded from other established grades on account of such mixtures.

Determination of commercially clean

Dockage is not assessed on mixed grain samples that meet the commercially clean specifications defined in the commercially clean determination table. The table is found in the Export shipments section of this chapter. All samples must be analyzed to determine if they are commercially clean prior to dockage assessment. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.1% of small seeds without hand sieving and weighing the seeds then dockage will be assessed using procedures defined under *Determination of dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures outlined in steps 1 through 5 below to confirm that the sample is not commercially clean prior to assessing a dockage.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
    - Official samples shall be at least 1 kg.
    - Unofficial samples shall be at least 1 kg.
2. Place approximately 250 grams of the sample at a time on the No. 4.5 round-hole hand sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. All material passing through the No. 4.5 round-hole sieve is weighed and the percentage calculated to determine if it meets the commercially clean specification of the grade for material removable through the No. 4.5 round hole sieve. (Column #2 in the commercially clean determination table)
5. Small seeds passing through the No. 4.5 round hole sieve are weighed and the percentage calculated to determine if they meet the commercially clean specification of the grade for small seeds. (Column #1 in the commercially clean determination table)

Should the percentage concentration of either of the factors determined in steps 1 through 5 exceed the specifications set out in columns 1 or 2 of the commercially clean determination table the sample will be considered to be not commercial clean. Dockage will be assessed on samples determined to be not commercially clean by using the procedures defined under *Determination of dockage.*

Determination of dockage

▲ **Important:** When a sample is to be graded as mixed grain, return dockage to the cleaned sample, and begin *Normal cleaning procedures* described in this section.

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow Normal cleaning procedures, using the Carter dockage tester.
2. Follow procedures for Cleaning for grade improvement. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Mixed Grain, Sample CW/CE Account Fireburnt
- Mixed Grain, Sample Salvage
- Mixed Grain, Sample Condemned
- Unofficial samples declared as processed

▲ **Important:** When a sample is to be graded as mixed grain, return dockage to the cleaned sample, and begin *Normal cleaning procedures* described in this section.

Normal cleaning procedures

1. Set up the Carter dockage tester as follows:

Feed control	# 6
Air control	Minimum # 4
Riddle	No. 6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 4.5 round-hole
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material handpicked or removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that passes through the No. 4.5 round-hole sieve
- Material such as large seeds removed by the No. 5 buckwheat sieve in excess of the grade tolerance for total foreign material
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, sieve the sample, using the No. 6 buckwheat hand sieve.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement

Material to be removed	Equipment	Effect on composition of dockage
Large seeds	No. 6 buckwheat hand sieve	Large seeds are seeds that pass through the No. 6 buckwheat sieve. Add them to dockage.
Stones	No. 6 buckwheat hand sieve	Add all stones that pass through the No. 6 buckwheat sieve to dockage.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of mixed grain.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Mixed Grain Canada Western Wheat
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. For grading, percentages by weight refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of mixed grain for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Broken	25 g	50 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Fusarium damage	25 g	100 g
Heated	25 g	100 g
Large seeds	100 g	250 g
Odour	working sample	working sample
Sclerotinia sclerotiorum	500 g	working sample
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Broken (BKN)

Broken kernels are pieces of grain that are less than three-quarters of a whole kernel.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Mixed grain, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Mixed grain, Sample Condemned*.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies having a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Procedures

- Determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Mixed Grain, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Mixed Grain, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Heated (HTD)

Heated kernels are kernels having the colour and odour typical of grain that has heated in storage or has been damaged by artificial drying, but not charred kernels. Heated includes all *heated* seeds in the sample.

Large seeds (LSDS)

Large seeds are seeds that do not pass through the No. 4.5 round-hole sieve and grains other than cereal grains, such as peas, beans, corn, flaxseed and domestic buckwheat. Large seeds remaining in the sample are included in *Total foreign material*.

Odour (HTD)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Mixed grain, Sample CW/CE, Account Odour*
A distinct heated odour	*Mixed grain, Sample CW/CE, Account Heated*
A distinct fireburnt odour	*Mixed grain, Sample CW/CE, Account Fireburnt*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded *Mixed Grain, Sample CW/CE Account Admixture.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

Note: Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement*.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5%, are graded *Mixed Grain, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation, up to 2.5%, are graded *Mixed Grain, Sample CE Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Mixed Grain, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Mixed Grain, Canada Western (CW)

Grade name	Stones %
Mixed Grain CW Wheat	0.1
Mixed Grain CW Rye	0.1
Mixed Grain CW Barley	0.1
Mixed Grain CW Oats	0.1
Mixed Grain CW Triticale	0.1
Mixed Grain CW	0.1

Basic grade:..... *Mixed Grain, CW Wheat*

If the above sample contained	Grade in western Canada
0.2% stones	*Mixed Grain, Rejected CW Wheat Account Stones*
1.0% stones	*Mixed Grain, Rejected CW Wheat Account Stones*
3.0% stones	*Mixed Grain, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Mixed Grain, Canada Eastern (CE)

Grade name	Stones %
Mixed Grain CE Wheat	0.1
Mixed Grain CE Rye	0.1
Mixed Grain CE Barley	0.1
Mixed Grain CE Oats	0.1
Mixed Grain CE Triticale	0.1
Mixed Grain CE	0.1

Basic grade:..... *Mixed Grain, CE Wheat*

If the above sample contained	Grade in eastern Canada
0.2% stones	*Mixed Grain, Sample CE Account Stones*
1.0% stones	*Mixed Grain, Sample CE Account Stones*
3.0% stones	*Mixed Grain, Sample Salvage*

Treated seed and other chemical substances

See Contaminated grain.

Primary and export grade determination tables

Mixed Grain, Canada Western (CW), composition

Grading factor	Mixed Grain CW Wheat	Mixed Grain CW Rye	Mixed Grain CW Barley	Mixed Grain CW Oats	Mixed Grain CW Triticale	Mixed Grain CW
** Composition	Mixtures of cereal grains and wild oats, containing greater than 50% wheat	Mixtures of cereal grains and wild oats, containing greater than 50% rye	Mixtures of cereal grains and wild oats, containing greater than 50% barley	Mixtures of cereal grains and wild oats, containing greater than 50% oats	Mixtures of cereal grains and wild oats, containing greater than 50% triticale	Mixtures of cereal grains and wild oats, no single cereal grain exceeding 50% but containing 50% or greater of total cereal grains

*All grades must have less than 50% by weight of wild oats

Mixed Grain, Canada Western (CW), damage

Grading factor	Mixed Grain CW Wheat	Mixed Grain CW Rye	Mixed Grain CW Barley	Mixed Grain CW Oats	Mixed Grain CW Triticale	Mixed Grain CW	Grade, if specs for Mixed Grain not met
Broken %	20	20	20	20	20	20	50% or less–*Sample Feed Grain* Over 50%–*Sample Broken Grain*
Fireburnt %	0.5	0.5	0.5	0.5	0.5	0.5	*Mixed Grain, Sample CW Account Fireburnt*
Heated %	10	10	10	10	10	10	*Mixed Grain, Sample CW Account Heated*

Mixed Grain, Canada Western (CW), foreign material

Grading factor	Mixed Grain CW Wheat	Mixed Grain CW Rye	Mixed Grain CW Barley	Mixed Grain CW Oats	Mixed Grain CW Triticale	Mixed Grain CW	Grade, if specs for Mixed Grain not met
Ergot %	0.10	0.10	0.10	0.10	0.10	0.10	*Mixed Grain, Sample CW Account Ergot*
Excreta %	0.02	0.02	0.02	0.02	0.02	0.02	*Mixed Grain, Sample CW Account Excreta*
Sclerotinia %	0.25	0.25	0.25	0.25	0.25	0.25	*Mixed Grain, Sample CW Account Admixture*
Stones %	0.1	0.1	0.1	0.1	0.1	0.1	*2.5% or less– Mixed Grain, Rejected (grade) Account Stones* *Over 2.5%– Mixed Grain, Sample Salvage*
Total % Foreign material	2	2	2	2	2	2	*Mixed Grain, Sample CW Account Admixture*

Mixed Grain, Canada Eastern (CE), composition

Grading factor	Mixed Grain CE Wheat	Mixed Grain CE Rye	Mixed Grain CE Barley	Mixed Grain CE Oats	Mixed Grain CE Triticale	Mixed Grain CE
** Composition	Mixtures of cereal grains and wild oats, containing greater than 50% wheat	Mixtures of cereal grains and wild oats, containing greater than 50% rye	Mixtures of cereal grains and wild oats, containing greater than 50% barley	Mixtures of cereal grains and wild oats, containing greater than 50% oats	Mixtures of cereal grains and wild oats, containing greater than 50% triticale	Mixtures of cereal grains and wild oats, no single cereal grain exceeding 50% but containing 50% or greater of total cereal grains

*All grades must have less than 50% by weight of wild oats

Mixed Grain, Canada Eastern (CE), damage

Grading factor	Mixed Grain CE Wheat	Mixed Grain CE Rye	Mixed Grain CE Barley	Mixed Grain CE Oats	Mixed Grain CE Triticale	Mixed Grain CE	Grade, if specs for Mixed Grain not met
Broken %	20	20	20	20	20	20	50% or less–*Sample Feed Grain* Over 50%–*Sample Broken Grain*
Fireburnt %	0.5	0.5	0.5	0.5	0.5	0.5	*Mixed Grain, Sample CE Account Fireburnt*
Heated %	10	10	10	10	10	10	*Mixed Grain, Sample CE Account Heated*

Mixed Grain, Canada Eastern (CE), foreign material

Grading factor	Mixed Grain CE Wheat	Mixed Grain CE Rye	Mixed Grain CE Barley	Mixed Grain CE Oats	Mixed Grain CE Triticale	Mixed Grain CE	Grade, if specs for Mixed Grain not met
Ergot %	0.25	0.25	0.25	0.25	0.25	0.25	*Mixed Grain, Sample CE Account Ergot*
Excreta %	0.02	0.02	0.02	0.02	0.02	0.02	*Mixed Grain, Sample CE Account Excreta*
Sclerotinia %	0.25	0.25	0.25	0.25	0.25	0.25	*Mixed Grain, Sample CE Account Admixture*
Stones %	0.1	0.1	0.1	0.1	0.1	0.1	*2.5% or less– Mixed Grain, Sample CE Account Stones* *Over 2.5%– Mixed Grain, Sample Salvage*
Total % Foreign material	2	2	2	2	2	2	*Mixed Grain, Sample CE Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean. Dockage is not reported for commercially clean shipments

Commercially clean (CCLN)

Export shipments are defined as commercially clean when meeting the commercially clean specifications listed in the table below upon following the *Determination of commercially clean* procedures described in this chapter.

No dockage is reported for samples representing commercially clean mixed grain.

Commercially clean determination table, mixed grain

	Material through #4.5 round-hole sieve	
Grade name	(1) Small seeds %	(2) Total %
Mixed Grain CW/CE Wheat	0.1	0.2
Mixed Grain CW/CE Rye	0.1	0.2
Mixed Grain CW/CE Barley	0.1	0.2
Mixed Grain CW/CE Oats	0.1	0.2
Mixed Grain CW/CE Triticale	0.1	0.2
Mixed Grain CW/CE	0.1	0.2

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Mixed grain on export is graded in accordance with the primary and export grade determination tables. The composition of samples is shown on all records and certificates.

10. Canola and rapeseed

Classes and varieties 10-3
Canola 10-3
Rapeseed 10-3

Determination of dockage 10-4
Definitions 10-4
Dockage not reported 10-4
Normal cleaning procedures 10-4
Composition of dockage 10-6
Primary elevator samples, commercially clean 10-6
Primary elevator samples, not commercially clean 10-6
Cleaning for grade improvement 10-7
Cleaning sample grade canola 10-8
Optional analysis 10-8

Grading 10-9
Important definitions 10-9
Net weight of sample 10-9
Hazardous substances in samples 10-9
Rounding rules 10-9
Processed samples 10-9
Crush 10-9
Colour Guides 10-9
Non-registered varieties 10-9
Representative portion for grading 10-10

Grading factors 10-11
Broken (BKN) 10-11
Colour (CLR) 10-11
Conspicuous admixture (CADMX) 10-11
Contaminated grain 10-12
Damage (DMG) 10-12
Distinctly green (DGR) 10-13
Earth pellets (EP) 10-13
Ergot (ERG) 10-13
Excreta (EXCR) 10-13
Extraneous material 10-13
Fertilizer pellets (FERT PLTS) 10-14
Fireburnt (FBNT) 10-14
Foreign material (FM) 10-14
Green (GR) 10-14
Heated (HTD) 10-14
Inconspicuous admixture (INC ADMX) 10-15
Odour (ODOR) 10-15
Rime 10-15
Sclerotinia sclerotiorum (SCL) 10-16
Soft earth pellets (SEP) 10-16
Sprouted (SPTD) 10-16
Staghead 10-16
Stones (STNS) 10-17
Treated seed and other chemical substances 10-18

Primary and export grade determination tables 10-19
Canola, Canada (CAN), standard of quality 10-19
Canola, Canada (CAN), damage 10-19
Canola, Canada (CAN), foreign material included in dockage 10-19
Rapeseed, Canada (CAN), standard of quality 10-20
Rapeseed, Canada (CAN), damage 10-20
Rapeseed, Canada (CAN), foreign material included in dockage 10-20

Export shipments 10-21
Commercially clean (CCLN) 10-21
Not commercially clean (NCC) 10-21
Determination of dockage 10-22
Composition of dockage 10-22
Grading 10-22

Classes and varieties

Canola and rapeseed are classes of the same botanical family.

This chapter describes dockage and grading procedures for canola and rapeseed. Canola has been used in the examples of grade names. If a sample of rapeseed is submitted for inspection, replace *Canola* with *Rapeseed.*

▲ **Important:** Ensure you use the correct grain code. Codes are different for canola and rapeseed.

Canola

The term canola applies to varieties that meet the canola standards for low levels of erucic acid and glucosinolates. Production of canola varieties is widespread.

Rapeseed

Rapeseed varieties are produced in small volumes, usually under contract. Shipments and submitted samples of rapeseed must be clearly identified as rapeseed.

▲ **Important:** Canola and rapeseed may be visually indistinguishable. However, their end uses are quite different. If you are not sure if the sample is canola or rapeseed, send the sample to the Chief Grain Inspector.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the manual.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Canola, Sample Canada Account Fireburnt
- Canola, Sample Salvage
- Canola, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 3
Air control	# 5
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner	Off

2. You also need the following hand sieves:

Round-hole sieves	Slotted sieve
No. 5	No. .028
No. 5.5	
No. 6	
No. 6.5	
No. 7	
No. 7.5	

3. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

4. For hand sieving use approximately 250 g per sieving

   ▲ **Important**:

   - Select the appropriately sized round-holed sieve. When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center. When using a slotted sieve, ensure the slotted perforations are parallel with the sieving motion.

   1. Sieve each portion over the round-hole sieve that will allow reasonably sound canola to pass through the sieve while removing large material.
   2. Sieve each portion over the .028 slotted sieve 30 times, as described above.

5. Combine the separated, cleaned 250-g portions.
6. Turn on the Carter dockage tester.
7. Run the entire working sample through the Carter dockage tester for aspiration only.
8. Using a Boerner-type divider, divide the sample to a portion of not less than 10 g.
9. Analyze the 10-g portion to determine the percentage by weight of conspicuous admixture and soft earth pellets.
10. Determine the dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material that remains on top of the round-hole sieve
- Material that passes through the .028 slotted sieve
- Material removed by aspiration
- Material that passes over the No. 000 riddle
- Conspicuous admixture, up to established grade tolerances, handpicked from the cleaned sample

  —In *Canola, Rejected (grade) Account Stones*, dockage includes Conspicuous admixture handpicked from the cleaned sample up to the tolerance for the grade of the sample.
  —In *Sample* grades, Conspicuous admixture is not included as dockage. When the weight of the Conspicuous admixture exceeds 2.0% of the net weight, the Conspicuous admixture becomes a second reason for the sample grade. This is recorded in Remarks.

- Soft earth pellets handpicked from the cleaned sample
- Material removed by *Cleaning for grade improvement*

Primary elevator samples, commercially clean

Commercially clean samples exiting primary elevators can have up to 0.5% for broken and reasonably sound canola or rapeseed deducted from the gross weight of the dockage. There is no deduction applicable to producer deliveries or submitted samples.
Samples exiting primary elevators are considered commercially clean when meeting the requirements set out in the table below after following *Normal Cleaning Procedures.*

Definition of commercial cleanliness, canola

Grade name	Material other than canola remaining on top of round-hole sieve and over No. 000 riddle %		Total net dockage %
	Roughage material such as wild oats, seed pods, knuckles	Total	
No. 1 Canada	0.3	0.5	2.5
No. 2 Canada	0.3	0.5	2.5
No. 3 Canada	0.3	0.5	2.5

Primary elevator samples, not commercially clean

In not commercially clean samples exiting primary elevators, there is no allowance for broken and reasonably sound canola or rapeseed. All the material removed by the slotted sieve is assessed as dockage.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement—Canola* for the list of equipment.
2. Sieve the sample by hand or pass it through the Carter dockage tester, depending on the material. When using a slotted sieve, select the sieve that will reduce the admixture of conspicuous inseparable material to within the grade tolerance with a minimum loss of reasonably sound canola.

   Note: Canola seeds that do not meet the definition of *Damage* as defined in the Grading factors section of this chapter are considered to be reasonably sound.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center. When using a slotted sieve, ensure the slotted perforations are parallel with the sieving motion.
3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Canola

Material to be removed	Equipment	Effect on composition of dockage
Conspicuous admixture or damaged seeds	No. .032 slotted hand sieve No. .035 slotted hand sieve No. .038 slotted hand sieve No. .040 slotted hand sieve Carter dockage tester as described in *Normal cleaning procedures* but with air setting at # 7, or alternate round-hole sieves. **Note:** When using the alternate air setting, the material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	Damaged seeds and other material, including canola, are added to dockage. Not more than 5.0% of sound canola may be removed for each single grade improvement achieved.

Cleaning sample grade canola

For canola that qualifies only for *Sample Canada, Account Admixture* after attempting cleaning for grade improvement, dockage is assessed using the No. .035 slotted sieve, the round-hole sieve appropriate for the admixture, and the Carter dockage tester with air control set at # 5. Conspicuous admixture is not added to dockage.

For canola that qualifies only for *Sample Canada, Account Damaged* after attempting cleaning for grade improvement, dockage is assessed using the appropriate round-hole and slotted sieves and the Carter dockage tester with air control set at # 5. Use the slotted sieve appropriate for removing material consisting mainly of weed seeds and small broken grain. Conspicuous admixture is not added to dockage.

▲ **Important:** Variations from the above settings require authority from the Chief Grain Inspector.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of canola.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Canola, No. 1 Canada
   4.0% Barley, No. 1 Canada Western
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Processed samples

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Crush

A crush is one pass of the roller under firm pressure over a seed stick on masking tape.

Colour Guides

The Canadian Grain Commission produces the Canola/Rapeseed Colour Guide for reference when assessing distinctly green seeds and the Canola/Rapeseed Heated Colour Guide for reference when assessing heated seeds. Grain industry members may obtain copies of these colour guides by contacting the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of canola or rapeseed for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Conspicuous admixture	5 g	50 g
Damage	5 g and/or 500 seeds	15 g and/or 1000 seeds
Distinctly green	500 seeds	1000 seeds
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Heated	1000 seeds	2000 seeds
Inconspicuous admixture	1 g	5 g
Odour	working sample	working sample
Rime	5 g	25 g
Sclerotinia sclerotiorum	100 g	500 g
Staghead	10 g	25 g
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Images available on web version

Broken (BKN)

Any broken canola that remains in the sample after cleaning and is not otherwise damaged is considered to be sound.

Colour (CLR)

In assessing colour, consider

- The amount and degree of discolouration of the whole seed, such as from weathering
- The amount of rime (seeds densely and completely covered by rime are assessed as *Damage*)
- The proportion of crushed seeds which are only pale green or slightly immature and therefore not assessed as distinctly green

Note: Whole seeds that are green may be as a result of thin seed coats of certain canola varieties. Whole green seeds of these varieties are not indicators of elevated chlorophyll levels and therefore are not considered distinctly green or assessed as part of colour evaluation. Only seeds which are distinctly green throughout when crushed are assessed as distinctly green.

▲ **Important**: Where colour is the grade determination, use the description under *Degree of soundness* in the primary and export grade determination tables to assign the grade. The CGC Canola/Rapeseed Colour Guide may be used to assist in the determination of distinctly green seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Conspicuous admixture (CADMX)

Conspicuous admixture refers to material that remain in the sample after cleaning and is easily distinguished from canola without the use of magnification, including

- Domestic seeds such as flaxseed, yellow mustard or yellow *Brassica carinata*, and whole shrunken or broken kernels of other grains
- Weed seeds such as cow cockle, lamb's-quarters, cleavers, smartweed, ball mustard and pigweed
- Conspicuous foreign material such as ergot, excreta, insect excreta, sclerotinia and stones

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Canola, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Canola, Sample Condemned*.

Damage (DMG)

Damage in canola includes seeds that are

- Distinctly shrunken or shriveled
- Badly discoloured from mould
- Completely and densely covered with rime
- Excessively weathered, sprouted, tan coloured, distinctly green, heated, insect damaged or otherwise damaged

Total damage is the total of damaged crushed seeds and any visually damaged uncrushed seeds.

Procedures

1. Divide the sample to the appropriate representative portion.
2. Handpick the representative portion for visually damaged seeds.
3. Determine the percentage concentration by weight.

Note: See distinctly green and heated for procedures to be followed in assessing these types of damage.

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout (refer to the CGC Canola/Rapeseed Colour Guide). Pale green or immature seeds are taken into account in the evaluation of colour. See *Colour*.

Procedures

1. Prepare the appropriate number of strips from the cleaned sample.
2. Crush each strip with one pass of the roller under firm pressure.
3. Determine the percentage of distinctly green seeds.

Note: The CGC Canola/Rapeseed Colour Guide may be used to assist in the determination of distinctly green seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Note: A 10-power magnifying lens may be used to confirm whether dark coloured seeds are brown or very dark green.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.

Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Canola, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Canola, Sample Condemned*.

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt seeds pop when crushed.

Procedures

Samples considered fireburnt are graded Canola, Sample Canada, Account Fireburnt

Foreign material (FM)

Foreign material in canola includes anything that is not canola, such as stones, ergot, sclerotinia, conspicuous admixture and inconspicuous admixture.

Green (GR)

See *Distinctly green*.

Heated (HTD)

Heated refers only to seeds that are distinctly or badly binburnt. Heated seeds may have a heated odour.

Crushed seeds may be

- Black—badly binburnt
- Dark brown- distinctly heated (refer to the CGC Canola/Rapeseed Heated Colour Guide)
- Light tan
  - light tan seeds without a heated odour are assessed as damaged
  - light tan seeds with a heated odour are assessed as heated
  - light tan seeds in combination with dark brown or black seeds, with or without a heated odour, are assessed as heated

Procedures

1. Prepare and examine the appropriate number of strips from the cleaned sample.
2. A crush is made with one pass of the roller under firm pressure.
3. Examine the crushed seeds for evidence of heating.
4. Where any heated seeds are found in the initial 1000 seeds or a heated odour is detected, a minimum of 2000 seeds must be analyzed.
5. Determine the percentage of heated seeds.
6. Heated seeds of other grains are included in the tolerance for *Heated.*

Note: The CGC Canola/Rapeseed Heated Colour Guide may be used to assist in the determination of heated seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Inconspicuous admixture (INC ADMX)

Inconspicuous admixture is defined as seeds of common wild mustard, domestic oriental mustard, domestic brown mustard, and brown *Brassica carinata* that are not readily distinguishable from canola.

Procedures

To determine the percentage by weight of inconspicuous admixture, analyse the sample with the aid of a microscope.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Canola, Sample Canada, Account Odour*
A distinct heated odour	*Canola, Sample Canada, Account Heated*
A distinct fireburnt odour	*Canola, Sample Canada, Account Fireburnt*

Rime

Rime is the lining of the pod adhered to the seed. Seeds that are completely and densely covered with white rime are classed as damaged in any grade. Seeds with light rime sparsely covering the seed coat are

- Classed as sound if not otherwise damaged
- Considered in the evaluation of colour. See *Colour*

Procedures

See *Damage.*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample. Refer to *Normal cleaning procedures*
2. Soft earth pellets are removed as dockage. See *Composition of dockage*.

Sprouted (SPTD)

Sprouted canola is defined as those seeds having a ruptured seed coat in combination with either a sprout that protrudes beyond the normal contour of the seed or distinct swelling of the seed. Seeds having a ruptured seed coat that are otherwise sound are only considered sprouted when found in combination with seeds meeting the definition of sprouted.

Procedures

1. Divide the sample to the appropriate representative portion.
2. Handpick the representative portion for sprouted seeds.
3. Determine the percentage by weight.

Note: Sprouted canola is included in "Total Damage" for grade assessment.

Staghead

Staghead or white rust is a fungal disease of canola. It affects the flowering parts of the plant, resulting in distorted antler-like structures that are often covered by white or grey powdery spores. For grading, staghead bodies are considered *Conspicuous admixture*.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Canola, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Canola, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Canola, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Canola, Canada (CAN)

Grade name	Stones %
No. 1 Canada	0.05
No. 2 Canada	0.05
No. 3 Canada	0.05

Basic grade:..... *Canola, No. 2 Canada*
Reason for basic grade:..... 4% Distinctly Green

If the above sample contained	Grade in western Canada
0.08% stones	*Canola, Rejected No. 2 Canada Account Stones*
3.0% stones	*Canola, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Canola, Canada (CAN)

Grade name	Stones %
No. 1 Canada	0.05
No. 2 Canada	0.05
No. 3 Canada	0.05

Basic grade:..... *Canola, No. 2 Canada*
Reason for basic grade:..... 4% Distinctly Green

If the above sample contained	Grade in eastern Canada
0.08% stones	*Canola, Sample Canada Account Stones*
3.0% stones	*Canola, Sample Salvage*

Treated seed and other chemical substances

See Contaminated grain.

Primary and export grade determination tables

Canola, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Reasonably well matured, sweet, good natural colour	Fairly well matured, sweet, reasonably good natural colour	May have the natural odour associated with low-quality seed, not distinctly sour, musty, rancid, or any odour that would indicate serious deterioration	
Variety	Any variety of canola registered under the *Seeds Act*	Any variety of canola registered under the *Seeds Act*	Any variety of canola	
Standard of cleanliness Commercially pure seed	Not more than 1.0% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage	Not more than 1.5% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage	Not more than 2.0% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage	*Canola, Sample Canada Account Admixture*

Canola, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Distinctly green %	2	6	20	*Canola, Sample Canada Account Damaged*
Heated %	0.1	0.5	2.0	*Canola, Sample Canada Account Heated*
Total % Damage	5	12	25	*Canola, Sample Canada Account Damaged*

Canola, Canada (CAN), foreign material included in dockage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Canola, Sample Canada Account Ergot*
Excreta %	0.02	0.02	0.02	*Canola, Sample Canada Account Excreta*
Sclerotinia %	0.05	0.10	0.15	*Canola, Sample Canada Account Admixture*
Stones %	0.05	0.05	0.05	2.5% or less - **West** -*Canola, Rejected (grade) Account Stones,* or **East** - *Canola, Sample Canada Account Stones* Over 2.5% - *Canola, Sample Salvage*
Total % Conspicuous admixture	1.0	1.5	2.0	*Canola, Sample Canada Account Admixture*
Inconspicuous admixture (*) %	1.0	1.0	1.0	50% or less - *Canola, Sample Canada Account Admixture* Over 50% -*Refuse screenings*

*Inconspicuous admixture not included in dockage

Rapeseed, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Reasonably well matured, sweet, good natural colour	Fairly well matured, sweet, reasonably good natural colour	May have the natural odour associated with low-quality seed, not distinctly sour, musty, rancid, or any odour that would indicate serious deterioration	
Variety	Any variety of rapeseed registered under the *Seeds Act*	Any variety of rapeseed registered under the *Seeds Act*	Any variety of rapeseed	
Standard of cleanliness Commercially pure seed	Not more than 1.0% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage	Not more than 1.5% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage	Not more than 2.0% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage	*Rapeseed, Sample Canada Account Admixture*

Rapeseed, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Distinctly green %	2	6	20	*Rapeseed, Sample Canada Account Damaged*
Heated %	0.1	0.5	2.0	*Rapeseed, Sample Canada Account Heated*
Total % Damage	5	12	25	*Rapeseed, Sample Canada Account Damaged*

Rapeseed, Canada (CAN), foreign material included in dockage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Rapeseed, Sample Canada Account Ergot*
Excreta %	0.02	0.02	0.02	*Rapeseed, Sample Canada Account Excreta*
Sclerotinia %	0.05	0.10	0.15	*Rapeseed, Sample Canada Account Admixture*
Stones %	0.05	0.05	0.05	2.5% or less - **West** - *Rapeseed, Rejected (grade) Account Stones,* or **East** - *Rapeseed, Sample Canada Account Stones* Over 2.5% - *Rapeseed, Sample Salvage*
Total % Conspicuous admixture	1.0	1.5	2.0	*Rapeseed, Sample Canada Account Admixture*
Inconspicuous admixture (*) %	5	5	5	50% or less - *Rapeseed, Sample Canada Account Admixture* Over 50% - *Refuse screenings*

*Inconspicuous admixture not included in dockage

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments defined as commercially clean may contain material as follows.

Definition of commercial cleanliness, canola

Grade name	Material other than canola remaining on top of round-hole sieve and over No. 000 riddle %		Total net dockage %
	Roughage material such as wild oats, seed pods, knuckles	Total	
No. 1 Canada	0.3	0.5	2.5
No. 2 Canada	0.3	0.5	2.5
No. 3 Canada	0.3	0.5	2.5

Dockage is reported to the nearest 0.1%.

A deduction for broken and reasonably sound canola removed as dockage is allowed

- On shipments from a terminal elevator, not for direct export, of up to 0.5%
- On shipments for direct export, of up to 0.8%
- On shipments for direct export, exiting primary elevators, of up to 0.5%

These deductions are applied to determine total net dockage for commercially clean shipments.

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean.* Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

Instead of the allowances for broken seed in commercially clean shipments, a deduction of up to 0.2% is applied to establish net dockage for direct exports only.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows:

Feed control	#3
Air control	#5
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner	Off

You will also need the following hand sieves.

Round-hole sieves	**Slotted sieve**
No. 5	No. .028
No. 5.5	
No. 6	
No. 6.5	
No. 7	
No. 7.5	

Composition of dockage

In export grade canola, dockage consists of

- Material other than canola that passes over the No. 000 riddle or remains on top of the round-hole sieve
- Material that passes through the No. .028 slotted sieve
- Material removed by aspiration
- less the applicable allowance of broken and reasonably sound canola deducted from the slotted and/or aspiration
- *Conspicuous admixture* handpicked from the cleaned sample
- Material removed by Cleaning for grade improvement

Grading

Canola on export is graded in accordance with primary and export specifications.

11. Flaxseed

Classes and varieties 11-3
Flaxseed 11-3

Determination of dockage 11-4
Definitions 11-4
Dockage not reported 11-4
Normal cleaning procedures 11-4
Composition of dockage 11-5
Primary elevator samples, commercially clean 11-6
Primary elevator samples, not commercially clean 11-6
Sample grades 11-6
Rejected account stones 11-6
Cleaning for grade improvement 11-6
Optional analysis 11-7

Grading 11-8
Important definitions 11-8
Net weight of sample 11-8
Hazardous substances in samples 11-8
Rounding rules 11-8
Processed sample 11-8
Non-registered varieties 11-8
Representative portion for grading 11-9

Grading factors 11-10
Broken (BKN) 11-10
Contaminated grain 11-10
Damage (DMG) 11-11
Earth pellets (EP) 11-11
Ergot (ERG) 11-11
Excreta (EXCR) 11-11
Extraneous material 11-11
Fertilizer pellets (FERT PLTS) 11-12
Fireburnt (FBNT) 11-12
Heated (HTD) 11-12
Inseparable seeds (INSEP SDS) 11-13
Odour (ODOR) 11-13
Other classes of flaxseed (OCL) 11-13
Sclerotinia sclerotiorum (SCL) 11-13
Soft earth pellets (SEP) 11-13
Stones (STNS) 11-14
Test weight (TWT) 11-16
Treated seed and other chemical substances 11-16

Primary and export grade determination table 11-17
Flaxseed, Canada Western (CW), standard of quality 11-17
Flaxseed, Canada Western (CW), damage 11-17
Flaxseed, Canada Western (CW), foreign material included in dockage 11-17
Flaxseed, Canada Eastern (CE), standard of quality 11-18
Flaxseed, Canada Eastern (CE), damage 11-18
Flaxseed, Canada Eastern (CE), foreign material included in dockage 11-18

Export shipments **11-19**
Commercially clean (CCLN) 11-19
Not commercially clean (NCC) 11-19
Determination of dockage 11-19
Composition of dockage 11-20
Grading 11-20

Classes and varieties

Flaxseed

Brown flaxseed applies to varieties with brown seed coats.

Yellow flaxseed applies to varieties with yellow seed coats.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by the following cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Flaxseed, Sample CW/CE Account Fireburnt
- Flaxseed, Sample Salvage
- Flaxseed, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 4
Air control	# 3
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner control	Off

2. You need the following hand sieves: No. 4.5 round-hole sieve, and one wire sieve, depending on the size of the flaxseed and the nature of the material to be removed.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14 No. 3x16

3. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

4. For hand sieving use approximately 250 g per sieving
   1. Sieve each portion over the appropriate wire sieve until maximum cleanout has been achieved.
   2. Sieve each portion over the No. 4.5 RH sieve until maximum cleanout has been achieved.

5. Combine the separated 250-g portions.
6. Turn on the Carter dockage tester.
7. Pour the entire working sample into the hopper.
8. After the sample has passed through the machine, turn off the machine.
9. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
10. Using a Boerner-type divider, divide not less than 20 g from the cleaned working sample.
11. From the 20-g portion, determine the percentage by weight of inseparable material.
12. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material remaining on top of the wire sieve
- Material that passes through the No. 4.5 round-hole sieve
- Material removed by aspiration
- Material that passes over the No. 000 riddle
- Soft earth pellets handpicked from the cleaned sample
- Inseparable material up to established grade tolerances handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Primary elevator samples, commercially clean

Samples exiting primary elevators are commercially clean when the net dockage does not exceed 2.5% of the sample weight. Commercially clean samples exiting primary elevators can have up to 0.5% for broken and reasonably sound flaxseed deducted from the gross weight of the dockage. There is no deduction applicable to producer deliveries or submitted samples.

Primary elevator samples, not commercially clean

In not commercially clean samples exiting primary elevators there is no allowance for broken and reasonably sound flaxseed.

Sample grades

In sample grades, inseparable admixture is not added to dockage. Where the inseparable material exceeds 2.0% of the sample by weight, the admixture becomes a reason for the sample grade and is recorded in remarks.

Rejected account stones

In samples that grade *Rejected (basic grade) Account Stones*, dockage includes inseparable material handpicked from the clean sample up to the tolerance.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement—Flaxseed* for the list of equipment.
2. Sieve the material by hand or pass it through the Carter dockage tester, depending on the material.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Flaxseed

Material to be removed	Equipment	Effect on composition of dockage
Inseparable material	No. 5 round-hole hand sieve	The material passing through the sieve is included in the dockage. Not more than 5.0% of sound flaxseed may be removed for each single grade improvement achieved.
Lightweight material	Carter dockage tester, with Feed control at #4 and air control at #4.5 **Note:** The material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	The material removed, including damaged seed, is included in the dockage. Not more than 5.0% of sound flaxseed may be removed from the cleaned sample for each single grade improvement achieved.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of flaxseed.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Flaxseed, No. 1 Canada Western
   4.0% Barley No. 1 Canada Western
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination table.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of flaxseed for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Broken	15 g	50 g
Damage (visual)	10 g	50 g
Damage (crush)	10 g	100 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Heated	10 g	100 g
Inseparable seeds	5 g	50 g
Odour	working sample	working sample
Other classes	15 g	50 g
Sclerotinia sclerotiorum	500 g	working sample
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Broken (BKN)

Broken seeds are pieces of flaxseed that are less than three-quarters the size of a whole seed.

▲ **Important:**

- Flaxseed have separate tolerances for *Broken.*
- Broken seeds of flaxseed are also included in *Total damage*.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Flaxseed, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Flaxseed, Sample Condemned*.

Damage (DMG)

Damage includes

- Seeds that are heated, broken, frosted, green, sprouted, shriveled or otherwise damaged
- Seeds with fractured seed coats

▲ **Important:** Seeds are not considered damaged if they

- Have any side portions of the boll membrane attached but are otherwise sound
- Appear scabbed or blistered but are otherwise sound

Procedures

1. Divide the sample to the appropriate representative portion.
2. Handpick the representative portion for visually damaged seeds and suspect damaged seeds.
3. Determine the percentage concentration by weight for the visually damaged seeds.
4. The suspect damaged seeds are cut or are placed on a strip of masking tape and crushed with a seed roller to expose the cotyledons. The number of damaged seeds is converted to a weight percentage by weighing an equal number of sound seeds and dividing the weight of the sound seeds by the weight of the representative portion. If any heated seeds are detected or if the sample has a heated odour, refer to the procedure for assessment of heated.
5. Add the two percentages of damage together to determine the total damage.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain.*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Flaxseed, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Flaxseed, Sample Condemned*.

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt seeds pop when crushed.

Procedures

Samples considered fireburnt are graded *Flaxseed, Sample CW/CE, Account Fireburnt.*

Heated (HTD)

Heated refers to seeds with discoloured cotyledons ranging in colour from orange to dark brown depending on the severity of heat damage. The seed coats of heated seeds are usually shiny brown or black. Severely heated seeds usually have a heated odour.

Procedures

1. The cleaned sample is divided to a representative portion, depending on the concentration of heated in the sample.
2. Those seeds having shiny brown to black seed coats are separated by hand as potential heated seeds.
3. The potentially heated seeds are cut or are placed on a strip of masking tape and crushed with a seed roller to expose the cotyledons.
4. Seeds having discoloured cotyledons ranging in colour from orange to dark brown are counted to determine the percentage of heated seeds.
5. When crushing samples, the number of heated seeds is converted to a weight percentage by weighing an equal number of sound seeds and dividing the weight of the sound seeds by the weight of the representative portion.
6. Heated seeds of other grains are included in the tolerance for *Heated*

Inseparable seeds (INSEP SDS)

Inseparable seeds are domestic seeds such as mustard seed, canola, whole shrunken or broken kernels of other grains and weed seeds such as wild oats and lady's thumb that remain in the sample after cleaning.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Flaxseed, Sample CW/CE Account Odour*
A distinct heated odour	*Flaxseed, Sample CW/CE Account Heated*
A distinct fireburnt odour	*Flaxseed, Sample CW/CE Account Fireburnt*

Other classes of flaxseed (OCL)

- In brown flaxseed, other classes of flaxseed refers to classes with yellow seed coats.
- In yellow flaxseed, other classes of flaxseed refers to classes with brown seed coats.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets are removed as dockage. See *Composition of dockage.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Flaxseed, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Flaxseed, Sample Canada Eastern Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Flaxseed, Sample Salvage.*

Examples: Western Canada

Primary grade determination table
Flaxseed, CW

Grade name	Stones %
No. 1 CW	0.05
No. 2 CW	0.05
No. 3 CW	0.05

Basic grade:..... *Flaxseed, No. 1 CW*

If the above sample contained	Grade in Western Canada
0.08% stones	*Flaxseed, Rejected No. 1 CW Account Stones*
3.0% stones	*Flaxseed, Sample Salvage*

Example: Eastern Canada

Primary grade determination table
Flaxseed CE

Grade name	Stones %
No. 1 CE	0.05
No. 2 CE	0.05
No. 3 CE	0.05

Basic grade:..... *Flaxseed, No. 1 CE*

If the above sample contained	Grade in Eastern Canada
0.08% stones	*Flaxseed, Sample CE Account Stones*
3.0% stones	*Flaxseed, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Primary and export grade determination table

Flaxseed, Canada Western (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Degree of soundness	Mature and sweet	Reasonably well matured and sweet	Excluded from higher grades on account of light weight or damaged seeds, may have the natural odour associated with low-quality seed, not distinctly sour, musty, rancid or any odour that would indicate serious deterioration	
Minimum test weight kg/hL (g/0.5 L)	65 (305)	62 (290)	No minimum	
Variety	Any variety of flaxseed registered under the *Seeds Act*	Any variety of flaxseed registered under the *Seeds Act*	Any variety of flaxseed	
Standard of Cleanliness Commercially pure seed	Not more than 1.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	Not more than 1.5% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	Not more than 2.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	*Flaxseed, Sample CW Account Admixture*
Yellow seeded flax % (in brown flax)	2	3	4	50% or less - *Flaxseed, Sample CW Account Admixture*
Brown seeded flax % (in yellow flax)	2	2	2	50% or less - *Flaxseed, Sample CW Account Admixture*

Flaxseed, Canada Western (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Broken %	13	25	35	50% or less - *Flaxseed, Sample CW Account Broken* Over 50% - *Sample Broken Grain*
Heated %	0.1	0.2	10.0	*Flaxseed, Sample CW Account Heated*
Total % Damage	13	25	No limit	

Flaxseed, Canada Western (CW), foreign material included in dockage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Flaxseed, Sample CW Account Ergot*
Excreta %	0.02	0.02	0.02	*Flaxseed, Sample CW Account Excreta*
Sclerotinia %	0.10	0.20	0.25	*Flaxseed, Sample CW Account Admixture*
Stones %	0.05	0.05	0.05	2.5% or less - *Flaxseed, Rejected (grade) Account Stones* Over 2.5% - *Flaxseed, Sample Salvage*
Inseparable seeds %	1.0	1.5	2.0	*Flaxseed, Sample CW Account Admixture*
Total % Foreign material included in dockage	1.0	1.5	2.0	*Flaxseed, Sample CW Account Admixture*

Flaxseed, Canada Eastern (CE), standard of quality

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Degree of soundness	Mature and sweet	Reasonably well matured and sweet	Excluded from higher grades on account of light weight or damaged seeds, may have the natural odour associated with low-quality seed, not distinctly sour, musty, rancid or any odour that would indicate serious deterioration	
Minimum test weight kg/hL (g/0.5 L)	65 (305)	62 (290)	No minimum	
Variety	Any variety of flaxseed registered under the *Seeds Act*	Any variety of flaxseed registered under the *Seeds Act*	Any variety of flaxseed	
Standard of Cleanliness Commercially pure seed	Not more than 1.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	Not more than 1.5% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	Not more than 2.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	*Flaxseed, Sample CE Account Admixture*
Yellow seeded flax % (in brown flax)	2	3	4	50% or less - *Flaxseed, Sample CE Account Admixture*
Brown seeded flax % (in yellow flax)	2	2	2	50% or less - *Flaxseed, Sample CE Account Admixture*

Flaxseed, Canada Eastern (CE), damage

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Broken %	13	25	35	50% or less - *Flaxseed, Sample CE Account Broken* Over 50% -*Sample Broken Grain*
Heated %	0.1	0.2	10.0	*Flaxseed, Sample CE Account Heated*
Total % Damage	13	25	No limit	

Flaxseed, Canada Eastern (CE), foreign material included in dockage

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Flaxseed, Sample CE Account Ergot*
Excreta %	0.02	0.02	0.02	*Flaxseed, Sample CE Account Excreta*
Sclerotinia %	0.10	0.20	0.25	*Flaxseed, Sample CE Account Admixture*
Stones %	0.05	0.05	0.05	2.5% or less - *Flaxseed, Sample CE Account Stones* Over 2.5% - *Flaxseed, Sample Salvage*
Inseparable seeds %	1.0	1.5	2.0	*Flaxseed, Sample CE Account Admixture*
Total % Foreign material included in dockage	1.0	1.5	2.0	*Flaxseed, Sample CE Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Dockage is reported to the nearest 0.1%.

A deduction for broken and reasonably sound flaxseed removed as dockage is allowed

- On shipments from a terminal elevator, not for direct export, of up to 0.5%
- On shipments for direct export, of up to 0.8%

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean.* Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

Instead of the allowances for broken seed in commercially clean shipments, a direct deduction of up to 0.2% is applied to establish net dockage for direct exports only.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows.

Feed control	#4
Air control	#3
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner	Off

You will also need the following hand sieves.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14 No. 3x16

Composition of dockage

In export grade flaxseed, dockage consists of

- Material that remains on top of the wire sieve
- Material that passes through the No. 4.5 round-hole hand sieve, less the applicable allowance of broken and reasonably sound flaxseed
- Material removed by aspiration
- Material that passes over the No. 000 riddle
- Inseparable material up to established grade tolerances, handpicked from the cleaned sample
- Material removed by *Cleaning for grade improvement*

Grading

Flaxseed on export is graded in accordance with primary and export grade determination tables.

12. Domestic mustard seed

Classes **12-3**

Determination of dockage **12-4**
Definitions 12-4
Dockage not reported 12-4
Normal cleaning procedures 12-4
Composition of dockage 12-6
Primary elevator samples, commercially clean 12-6
Primary elevator samples, not commercially clean 12-6
Cleaning for grade improvement 12-6
Optional analysis 12-8

Grading **12-9**
Important definitions 12-9
Net weight of sample 12-9
Hazardous substances in samples 12-9
Processed sample 12-9
Rounding rules 12-9
Crush 12-9
Non-registered varieties 12-9
Representative portion for grading 12-10

Grading factors **12-11**
Blotched seeds 📷 12-11
Broken (BKN) 12-11
Canola (CNL) 12-11
Classes 12-11
Cockle (COC) 12-11
Colour (CLR) 12-12
Conspicuous admixture (CADMX) 12-12
Conspicuous inseparable seeds 12-12
Contaminated grain 12-13
Damage (DMG) 12-13
Distinctly detrimental (DDET) 12-14
Distinctly green (DGR) 12-14
Earth pellets (EP) 12-14
Ergot (ERG) 12-15
Excreta (EXCR) 12-15
Extraneous material 12-15
Fertilizer pellets (FERT PLTS) 12-15
Fireburnt kernels (FBNT) 12-16
Frost (FR) 12-16
Green (GR) 12-16
Heated kernels (HTD) 12-16
Inconspicuous admixture (INC ADMX) 12-16
Insect Damage (I DMG) 📷 12-17
Mixed classes (MXD CL) 12-17
Odour (ODOR) 12-17
Other classes (OCL) 12-17
Other distinctly detrimental seeds (ODDET) 12-18
Rime 📷 12-18

Sclerotinia sclerotiorum (SCL) 12-18
Soft earth pellets (SEP) 12-18
Sprouted (SPTD) 12-19
Stones (STNS) 12-19
Treated seed and other chemical substances 12-21
Variety (VAR) 12-21
Wild mustard (WM) 12-21

Primary and export grade determination tables 12-22
Domestic Mustard Seed, Brown, Canada (CAN), standard of quality 12-22
Domestic Mustard Seed, Brown, Canada (CAN), damage 12-22
Domestic Mustard Seed, Brown, Canada (CAN), foreign material 12-22
Domestic Mustard Seed, Oriental, Canada (CAN), standard of quality 12-23
Domestic Mustard Seed, Oriental, Canada (CAN), damage 12-23
Domestic Mustard Seed, Oriental, Canada (CAN), foreign material 12-23
Domestic Mustard Seed, Yellow, Canada (CAN), standard of quality 12-24
Domestic Mustard Seed, Yellow, Canada (CAN), damage 12-24
Domestic Mustard Seed, Yellow, Canada (CAN), foreign material 12-24

Export shipments 12-25
Commercially clean (CCLN) 12-25
Not commercially clean (NCC) 12-25
Determination of dockage 12-25
Composition of dockage 12-26
Grading 12-26

Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Domestic Mustard Seed, Sample Canada Yellow Account Heated.*

Identifying classes of domestic mustard seed

Class	Colour	Approximate size	Shape	Surface
Yellow	Light creamy-yellow to yellow Occasional seed is light or yellowish brown	2 to 3 mm in diameter	Spherical or oval	Textured, similar to an orange peel, hilum area– small white spot on a deep yellow to light tan circular area
Brown	Reddish-brown to dark-brown	2 mm or less in diameter	Spherical or oval	Predominant netting, ridges are thicker than oriental mustard, hilum area – white on a black or darker brown circular area
Oriental	Predominantly yellow to dark-yellow, with some seeds ranging from light brown to brown	1.2 to 2.0 mm in width, 1.6 to 3.0 mm in length	Oval	Predominant netting, not as predominant as brown mustard, ridges are fine, hilum area – white on a darker yellow to lighter brown circular area
Mixed	Yellow and brown mustard seed containing less than 90.0% of one class See also *Domestic mustard seed, oriental: Other classes*			

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Domestic Mustard Seed, Sample Canada (class) Account Fireburnt
- Domestic Mustard Seed, Sample Salvage
- Domestic Mustard Seed, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 3
Air control	# 7
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	off

2. You also need the following hand sieves:

Round-hole hand sieves	Slotted hand sieves
No. 5.5	No. .028
No. 6	No. .032
No. 6.5	No. .035
No. 7	No. .038
No. 7.5	No. .040

3. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

4. For hand sieving use approximately 250 g.

▲ **Important:**
- Ensure you start with the right sized sieves. When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
  1. Use whichever round-hole sieve will achieve maximum removal of large material with minimum loss of domestic mustard seed.
  2. Use whichever slotted sieve will achieve maximum removal of weed seeds with minimum loss of domestic mustard seed.

5. Combine the separated, cleaned 250-g portions.
6. Turn on the Carter dockage tester.
7. Pour the sample into the hopper.
8. After the sample has passed through the machine, turn off the machine.
   - Reduce the air setting to #5 if there is a large loss of whole, reasonably sound seed.
   - If the sample after normal cleaning with air control at #7 qualifies only for *Sample* grade, you must start all over again. Recombine the sample with whatever dockage material has been removed. Re-assess dockage with the appropriate sieves and the air control set at #5.

9. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material remaining on top of the round-hole hand sieve
- Material passing through the slotted hand sieve
- Material passing over the No. 000 riddle
- Material removed by aspiration
- Material removed by *Cleaning for grade improvement*

Primary elevator samples, commercially clean

Commercially clean samples exiting primary elevators can have up to 0.5% for broken and reasonably sound mustard seed deducted from the gross weight of the dockage. Samples exiting primary elevators are considered commercially clean when the net dockage does not exceed 2.5% of the sample weight. There is no deduction applicable to producer deliveries or submitted samples.

Primary elevator samples, not commercially clean

In not commercially clean samples exiting primary elevators, there is no allowance for broken and reasonably sound mustard seed. All the material removed by the slotted sieve is assessed as dockage.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

Carter dockage tester

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement— domestic mustard seed.*
2. Pass the sample through the Carter dockage tester.
3. Weigh the additional dockage and add it to the original dockage.

Spiral cleaner— for yellow mustard seed and only upon request

Operating procedures

1. The sample to be cleaned by the spiral is the net sample remaining after normal cleaning procedures.
2. Pour the sample into the feed hopper at the top of the spiral. Once the sample has passed through the spiral, lightly tap it to remove any lodged seeds remaining on the flights..
3. Collect the seeds that have discharged from the bottom spout (spout closest to the core of the cleaner)
4. Determine the percentage by weight of the seeds that have discharged and determine if more than 5.0% of yellow mustard has been removed per grade improvement.

Reporting procedures

1. Where the grade is not improved or more than 5.0% of domestic mustard is removed for each grade improvement, the grade and dockage will not be revised.
2. Where the grade can be improved while removing 5.0% or less of domestic mustard for each grade improvement, the certificate will state only the grade and dockage achieved through use of the spiral cleaner or Carter dockage tester.

Cleaning for grade improvement—domestic mustard seed

Material to be removed	Equipment		Effect on composition of dockage
Excessive inseparable weed seeds or damaged mustard seeds for yellow, brown and oriental mustard seed **Note:** The material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	Spiral cleaner—on request, for yellow mustard seed only		Not more than 5.0% of domestic mustard seed may be removed for each grade improvement achieved.
	Carter dockage tester set as follows:		
	Feed control	# 3	
	Air control	# 7	
	Riddle	No. 000	
	Top sieve	No. 4.5 or No. 5 round-hole	
	Centre sieve	blank tray	
	Bottom sieve	none	
	Sieve cleaner control	off	
Canola or wild mustard in yellow mustard seed	Carter dockage tester set as follows:		The material passing through the sieve is included in the dockage. Not more than 5.0% of domestic mustard seed may be removed for each grade improvement achieved.
	Feed control	# 3	
	Air control	off	
	Riddle	No. 000	
	Top sieve	none	
	Centre sieve	No. 4.5 or No. 5 round-hole	
	Bottom sieve	blank tray	
	Sieve cleaner control	off	

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of mustard.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Domestic Mustard Seed, No. 1 Canada Yellow
   4.0% Rye, No. 2 Canada Western
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. For grading, percentages by weight refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Crush

A crush is one pass of the roller under firm pressure over a seed stick on masking tape.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of domestic mustard seed (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Blotched (Oriental mustard seed)	5 g	25 g
Canola	5 g	25 g
Cockle	5 g	50 g
Colour	working sample	working sample
Conspicuous admixtures	5 g	50 g
Damage	5 g	25 g
Distinctly detrimental	5 g	50 g
Distinctly green	500 seeds	1000 seeds
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Heated	500 seeds	1000 seeds
Inconspicuous admixture (Brown & Oriental mustard seed)	5 g	25 g
Odour	working sample	working sample
Other classes	5 g	25 g
Other distinctly deterimental seeds (Yellow mustard seed)	5 g	25 g
Rime	5 g	25 g
Sclerotinia sclerotiorum	100 g	500 g
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated Seed	working sample	working sample
Wild mustard seed	5 g	25 g

Grading factors

Images available on web version

Blotched seeds

Blotched seeds are oriental mustard seeds with black or brown discolourations on the seed coat.

- Seeds only partly discoloured but otherwise sound are considered sound, but the discolouration is taken into account in the evaluation of colour. See *Colour*.
- Seeds completely discoloured by blotch are considered damaged. See *Damage.*

Broken (BKN)

Any broken mustard that remains in the sample after cleaning and is otherwise sound is considered to be sound.

Canola (CNL)

Brown and oriental mustard seed

- canola is classed as *Inconspicuous admixture.*

Yellow mustard seed

- canola is classed as *Distinctly detrimental.*

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Domestic Mustard Seed, Sample Canada (Class), Account Heated*. For a description of classes, see *Identifying classes of domestic mustard seed.*

Cockle (COC)

Cockle, or cow cockle, is a hard roundish seed with a dull surface covered with numerous small bumps giving the seed a rough spiky appearance. Colour can be deep black, bluish-black or orangish-brown.

Brown and oriental mustard seed

- cockle is part of *Conspicuous admixture.*

Yellow mustard seed

- cockle is considered *Distinctly detrimental* and included in *Total conspicuous inseparable seeds.*

Procedures

Use a microscope to examine the sample.

Colour (CLR)

In analysing colour, consider

- The general degree of maturity
- The amount and degree of discolouration, such as from weathering
- The proportion of damaged seeds, which are distinctly green or otherwise colour-damaged. See *Damage* and *Distinctly green*.
- The amount of rime—light rime is considered in the overall appearance of the sample. See *Damage*.

Conspicuous admixture (CADMX)

Conspicuous admixture is also called *Conspicuous inseparable seeds* in the grade determination tables.

Oriental and brown mustard seed

- Small seeds or broken seeds of other grains
- Weed seeds such as cow cockle, lamb's-quarters, ball mustard, pigweed, cleavers, smartweed and lady's-thumb.
- Any conspicuous foreign material except stones and soft earth pellets

Note: Canola and wild mustard are considered Inconspicuous admixture in oriental and brown mustard seed

See *Inconspicuous admixture*.

Yellow mustard seed

- Seeds and foreign material designated as distinctly detrimental. See *Distinctly detrimental*
- Small seeds and broken kernels of other grains
- Weed seeds such as pigweed, lady's-thumb, lamb's-quarters and smartweed
- Any conspicuous foreign material except stones and soft earth pellets

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Conspicuous inseparable seeds

See *Conspicuous admixture*

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Domestic Mustard Seed, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Domestic Mustard Seed, Sample Condemned*.

Damage (DMG)

Damaged seeds include those that are

- Distinctly shrunken or shrivelled
- Badly discoloured from mould
- Completely and densely covered with rime
- Insect damaged, excessively weathered, sprouted, distinctly green, heated or otherwise damaged
- *Oriental mustard* – completely discoloured by blotch

Procedures

1. Handpick the representative portion to determine the content of visually damaged seeds without magnification.
2. Determine the percentage by weight.
3. Crush the appropriate number of strips from the portion remaining.
   A crush is made with only one pass of the roller under firm pressure.
4. Convert the count of damaged seeds on the strip to percentage by weight. Add the percentage of visually damaged seeds and crushed seeds for *Total damage*.

Note: A 10-power magnifying lens may be used to confirm damage.

Distinctly detrimental (DDET)

Brown and oriental mustard seed

- Cow cockle
- Sclerotinia

Yellow mustard seed

- Cow cockle
- Sclerotinia
- Wild mustard, canola/rapeseed
- Other distinctly detrimental seeds (see *Other distinctly detrimental seeds*)

Ball mustard	Stinkweed or pennycress
Cleavers	Tansy mustard
Cockle	Tumbling mustard
Dog mustard	Wild buckwheat
Hare's ear mustard	Wormseed mustard

There are separate distinctly detrimental tolerances for cow cockle, sclerotinia and wild mustard in combination with canola or rapeseed and other distinctly detrimental seeds. All listed are included in the total of distinctly detrimental and total of conspicuous inseparable seeds.

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour. See *Colour*.

Procedures

See *Damage.*

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are considered as a separate grading factor in all grades of domestic mustard seed.
  - Grades of domestic mustard seed may contain one fertilizer pellet in 1000 g, including samples of commercially clean mustard seed.
  - Samples containing one fertilizer pellet per 500 g up to 1.0% are graded *Domestic Mustard Seed, Sample Canada (Class) Account Fertilizer Pellets*.
  - Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Domestic Mustard Seed, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Domestic Mustard Seed, Sample Condemned*.

Important: For samples between 500 and 1000 g – if the sample contains one fertilizer pellet, the sample grades *Domestic Mustard Seed, Sample Canada (Class) Account Fertilizer Pellets*. If the sample contains no fertilizer pellets, it is considered to be within the grade tolerance.

Fireburnt kernels (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt seeds pop when crushed.

Procedures

Samples considered fireburnt are graded *Domestic Mustard Seed, Sample Canada (Class) Account Fireburnt.*

Frost (FR)

See *Damage.*

Green (GR)

See *Distinctly green*.

Heated kernels (HTD)

Heated refers only to seeds that are distinctly heated or badly binburnt. Heated seeds have a heated odour.

Crushed seeds may be

- Black—badly binburnt
- Dark chocloate brown—distinctly heated
- Light tan—slightly damaged from oxidation. If they have an odour or are present with brown or black crushed seeds, they are considered heated. Otherwise, they are included in *Total damage*, not heated.

Procedures

1. Examine 500 seeds for evidence of heating.
2. If no heated seeds detected, assess crushes for other damage. See *Damage.*
3. If at least 1 heated seed is detected, crush and assess an additional 500 seeds for heated seeds.
4. Heated seeds of other grains are included in the tolerance for *Heated.*

Inconspicuous admixture (INC ADMX)

In brown and oriental mustard seed, inconspicuous admixture includes

- Canola
- Common wild mustard seed
- Any other seeds that blend and are not readily identified

Procedures

To determine the percentage by weight of inconspicuous admixture, analyse the sample with the aid of a microscope.

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Insect Damage (I DMG)

Insect damaged seeds are characterized by a perforation of the seed coat.

See Damage.

Mixed classes (MXD CL)

Samples are designated mixed classes when they contain sufficient quantities of other classes of mustard seed. See *Other classes*.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Domestic Mustard Seed, Sample Canada (Class), Account Odour*
A distinct heated odour	*Domestic Mustard Seed, Sample Canada (Class), Account Heated*
A distinct fireburnt odour	*Domestic Mustard Seed, Sample Canada (Class), Account Fireburnt*

Other classes (OCL)

If a sample contains more than 10% other classes, it is designated *Mixed*. Mixed mustard seed is graded according to all specifications except other classes, as in *Mustard Seed, No. 1 Canada Mixed*.

Brown mustard seed

- other classes are yellow and oriental mustard seed and Brassica Carinata.

Oriental mustard seed

- other classes are yellow and brown mustard or Brassica Carinata.

Other class	Tolerance
Brown mustard or Brown Brassica Carinata	Working tolerance for seeds with brown hulls • For Canada No. 1 Oriental, 2.0% • For Canada No. 2, 3, 4 Oriental, 5.0%
Yellow mustard or Yellow Brassica Carinata	Considered *Mixed* if sample contains more than 10% of yellow mustard seed

Note: Working tolerances are applied in addition to the established grading tolerances.

Yellow mustard seed

- other classes are brown and oriental mustard seed or Brassica Carinata.

Other distinctly detrimental seeds (ODDET)

In yellow domestic mustard seed, the seeds listed below are considered *Other distinctly detrimental seeds.*

Ball mustard	Stinkweed or pennycress
Cleavers	Tansy mustard
Cockle	Tumbling mustard
Dog mustard	Wild buckwheat
Hare's ear mustard	Wormseed mustard

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analysis are confirmed by seed analysts.

See *Distinctly detrimental.*

Rime

Rime is the lining of the pod adhered to the seed. Seeds that are completely and densely covered with white rime, with the exception of the hilum, are classed as damaged in any grade. Seeds with light rime sparsely covering the seed coat are

- Considered as sound if not otherwise damaged
- Considered in the evaluation of colour. See *Colour.*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only— if they do not crumble, they are considered *Stones.*
- Any non-toxic material of similar consistency

▲ **Important:** In domestic mustard seed, fertilizer pellets are not considered soft earth pellets. See *Fertilizer pellets.*

Sprouted (SPTD)

Sprouted mustard is defined as those seeds having a ruptured seed coat in combination with either a sprout that protrudes beyond the normal contour of the seed or distinct swelling of the seed. Seeds having a ruptured seed coat that are otherwise sound are only considered sprouted when found in combination with seeds meeting the definition of sprouted.

Procedures

1. Divide the sample to the appropriate representative portion.
2. Handpick the representative portion for sprouted seeds.
3. Determine the percentage by weight.

Note: Sprouted mustard is included in "Total Damage" for grade assessment.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency.

Note: Fertilizer pellets are **not** assessed as stones in samples of Domestic Mustard Seed. See *Fertilizer pellets.*

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Domestic Mustard Seed, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Domestic Mustard Seed, Sample Canada (Class) Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Domestic Mustard Seed, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Domestic Mustard Seed

Grade name	Stones %
No. 1 Canada	0.05
No. 2 Canada	0.05
No. 3 Canada	0.05
No. 4 Canada	0.10

Basic grade:..... *Domestic Mustard Seed, No. 2 Canada (Class)*
Reason for basic grade:..... 2.0% Distinctly green

If the above sample contained	Grade in western Canada
0.08% stones	*Domestic Mustard Seed, Rejected No. 2 Canada (Class) Account Stones*
1.0% stones	*Domestic Mustard Seed, Rejected No. 2 Canada (Class) Account Stones*
3.0% stones	*Domestic Mustard Seed, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Domestic Mustard Seed

Grade name	Stones %
No. 1 Canada	0.05
No. 2 Canada	0.05
No. 3 Canada	0.05
No. 4 Canada	0.10

Basic grade:..... *Domestic Mustard Seed, No. 2 Canada (Class)*
Reason for basic grade:..... 2.0% Distinctly green

If the above sample contained	Grade in eastern Canada
0.08% stones	*Domestic Mustard Seed, No. 4 Canada (Class)*
1.0% stones	*Domestic Mustard Seed, Sample Canada (Class) Account Stones*
3.0% stones	*Domestic Mustard Seed, Sample Salvage*

Treated seed and other chemical substances

See *Contaminated Grain.*

Variety (VAR)

Domestic mustard seed is graded without reference to variety.

Wild mustard (WM)

Brown and oriental mustard seed

- wild mustard seeds are classed as *Inconspicuous admixture.*

Yellow mustard seed

- wild mustard seeds are classed as *Distinctly detrimental.*

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Primary and export grade determination tables

Domestic Mustard Seed, Brown, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Degree of soundness	Reasonably well matured, sweet, good natural colour	Fairly well matured, sweet, reasonably good colour	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	
Variety	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard	
Other Classes %	1	2	5	10	Over 10% -use all other grading criteria and grade as *Domestic Mustard Seed (grade) Mixed*

Note: The class, whether yellow, oriental, brown or mixed is added to the grade name

Domestic Mustard Seed, Brown, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Distinctly Green %	1.5	2.0	3.5	3.5	*Domestic Mustard Seed, Sample Canada Brown Account Damaged*
Heated %	0.1	0.2	0.5	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Heated*
Total % Damage	1.5	3.0	5.0	10.0	*Domestic Mustard Seed, Sample Canada Brown Account Damaged*

Domestic Mustard Seed, Brown, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Cow cockle %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Sclerotinia %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Total % Distinctly detrimental	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Total % Conspicuous inseparable seeds	0.3	0.5	0.7	3.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Inconspicuous admixture %	1.0	1.0	1.0	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Ergot %	0.05	0.05	0.05	0.05	*Domestic Mustard Seed, Sample Canada Brown Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Domestic Mustard Seed, Sample Canada Brown Account Excreta*
Soft earth pellets %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Brown Account Admixture*
Stones %	0.05	0.05	0.05	0.10	2.5% or less -*Domestic Mustard Seed, Rejected (grade) Brown Account Stones*, or *Domestic Mustard Seed, Sample Canada Brown Account Stones* Over 2.5% -*Domestic Mustard Seed, Sample Salvage*

Domestic Mustard Seed, Oriental, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Degree of soundness	Reasonably well matured, sweet, good natural colour	Fairly well matured, sweet, reasonably good colour	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	
Variety	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*		
Other Classes % (*)	1	2	5	10	Over 10% - use all other grading criteria and grade as *Domestic Mustard Seed (grade) Mixed*

(*) See working tolerance for "Other Classes"
Note: The class, whether yellow, oriental, brown or mixed is added to the grade name

Domestic Mustard Seed, Oriental, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Distinctly Green %	1.5	1.5	3.5	3.5	*Domestic Mustard Seed, Sample Canada Oriental Account Damaged*
Heated %	0.1	0.2	0.5	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Heated*
Total % Damage	1.5	3.0	5.0	10.0	*Domestic Mustard Seed, Sample Canada Oriental Account Damaged*

Domestic Mustard Seed, Oriental, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Cow cockle %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Sclerotinia %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Total % Distinctly detrimental	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Total % Conspicuous inseparable seeds	0.3	0.5	0.7	3.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Inconspicuous admixture %	0.5	1.0	1.0	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Ergot %	0.05	0.05	0.05	0.05	*Domestic Mustard Seed, Sample Canada Oriental Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Domestic Mustard Seed, Sample Canada Oriental Account Excreta*
Soft earth pellets %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Oriental Account Admixture*
Stones %	0.05	0.05	0.05	0.10	2.5% or less - *Domestic Mustard Seed, Rejected (grade) Oriental Account Stones*, or *Domestic Mustard Seed, Sample Canada Oriental Account Stones* Over 2.5% - *Domestic Mustard Seed, Sample Salvage*

Domestic Mustard Seed, Yellow, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Degree of soundness	Reasonably well matured, sweet, good natural colour	Fairly well matured, sweet, reasonably good colour	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	May have the natural odour associated with low-quality seed not any odour that would indicate serious deterioration	
Variety	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard registered under the *Seeds Act*	Any variety of mustard	
Other Classes %	1	2	5	10	Over 10% - use all other grading criteria and grade as *Domestic Mustard Seed (grade) Mixed*

Note: The class, whether yellow, oriental, brown or mixed is added to the grade name

Domestic Mustard Seed, Yellow, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Distinctly Green %	1.5	1.5	3.5	3.5	*Domestic Mustard Seed, Sample Canada Yellow Account Damaged*
Heated %	0.1	0.2	0.5	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Heated*
Total % Damage	1.5	3.0	5.0	10.0	*Domestic Mustard Seed, Sample Canada Yellow Account Damaged*

Domestic Mustard Seed, Yellow, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Cow cockle %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Sclerotinia %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Wild mustard, canola/rapeseed %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Other distinctly detrimental %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Total % Distinctly detrimental	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Total % Conspicuous inseparable seeds	0.3	0.5	0.7	3.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Ergot %	0.05	0.05	0.05	0.05	*Domestic Mustard Seed, Sample Canada Yellow Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Domestic Mustard Seed, Sample Canada Yellow Account Excreta*
Soft earth pellets %	0.1	0.2	0.3	1.0	*Domestic Mustard Seed, Sample Canada Yellow Account Admixture*
Stones %	0.05	0.05	0.05	0.10	2.5% or less - *Domestic Mustard Seed, Rejected (grade) Yellow Account Stones*, or *Domestic Mustard Seed, Sample Canada Yellow Account Stones* Over 2.5% - *Domestic Mustard Seed, Sample Salvage*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Dockage is reported to the nearest 0.1%.

A deduction for broken and reasonably sound mustard seed removed as dockage is allowed

- On shipments from a terminal elevator, not for direct export, of up to 0.5%
- On shipments for direct export, of up to 0.8%
- On shipments for direct export, exiting primary elevators, of up to 0.5%

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

Instead of the allowances for broken seed in commercially clean shipments, a deduction of up to 0.2% is applied to establish net dockage for direct exports only.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows.

Setting	Export
Feed control	#3
Air control	#5
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner control	Off

You will also need the following hand sieves.

Round-hole hand sieves	Slotted hand sieves
No. 5.5	No. .028
No. 6	No. .032
No. 6.5	
No. 7	
No. 7.5	

Composition of dockage

In export domestic mustard seed shipments, dockage consists of

- Material other than mustard which passes over the No. 000 riddle or remains ontop of the round-hole sieve
- Material that passes through the No. .028 or No. .032 slotted hand sieve, less the applicable allowance for broken or reasonably sound small whole mustard seed
- Material removed by aspiration
- Material removed by *Cleaning for grade improvement*

Grading

Domestic mustard seed on export is graded in accordance with the primary and export grade determination tables

13. Buckwheat

Determining the size of buckwheat 13-3

Determination of dockage 13-4
Definition 13-4
Dockage not reported 13-4
Assessing dockage in small buckwheat 13-5
Normal cleaning procedures 13-5
Composition of dockage 13-5
Commercially clean 13-6
Cleaning for grade improvement 13-6
Assessing dockage in large buckwheat 13-7
Normal cleaning procedures 13-7
Composition of dockage 13-7
Commercially clean 13-8
Cleaning for grade improvement 13-8
Optional analysis 13-9

Grading 13-10
Important definitions 13-10
Net weight of sample 13-10
Hazardous substances in samples 13-10
Processed sample 13-10
Rounding rules 13-10
Non-registered varieties 13-10
Representative portion for grading 13-11

Grading factors 13-12
Cereal grains (CGRN) 13-12
Contaminated grain 13-12
Damage (DMG) 13-12
Dehulled (DHULL) 13-13
Earth pellets (EP) 13-13
Ergot (ERG) 13-13
Excreta (EXCR) 13-13
Extraneous material 13-13
Fertilizer pellets (FERT PLTS) 13-14
Fireburnt (FBNT) 13-14
Immature (IM) 13-14
Matter other than cereal grains (MOTCG) 13-14
Odour (ODOR) 13-14
Sclerotinia sclerotiorum (SCL) 13-15
Size 13-15
Soft earth pellets (SEP) 13-15
Stones (STNS) 13-15
Test weight (TWT) 13-17
Treated seed and other chemical substances 13-17
Variety (VAR) 13-17

Primary and export grade determination tables 13-18
Buckwheat, Canada (CAN), standard of quality 13-18
Buckwheat, Canada (CAN), damage 13-18

Buckwheat, Canada (CAN), foreign material 13-18

Export shipments 13-19
Commercially clean (CCLN) 13-19
Not commercially clean (NCC) 13-19
Assessing dockage for small buckwheat 13-19
Assessing dockage for large buckwheat 13-20
Grading 13-20

Determining the size of buckwheat

1. Using a Boerner-type divider, divide a representative portion of approximately 250 g from the cleaned sample.
2. Set up the Carter dockage tester as follows.

Feed control	# 6
Air control	Off
Riddle	None
Top sieve	No. 8 slotted
Centre sieve	Blank tray
Bottom sieve	None
Sieve cleaner control	Off

3. Turn on the Carter dockage tester.
4. Pour the portion into the hopper.
5. Turn off the Carter dockage tester.
6. Determine the percentage by weight of the kernels passing through the No. 8 slotted sieve.

If the percentage of kernels passing through the No. 8 slotted sieve is . . .	**Then the buckwheat is . . .**
20.0 or less	Large
More than 20.0	Small

Determination of dockage

Definition

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as “any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain”. Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Buckwheat, Sample Canada (size) Account Fireburnt
- Buckwheat, Sample Salvage
- Buckwheat, Sample Condemned
- Unofficial samples declared as processed

Assessing dockage in small buckwheat

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Buckwheat is considered small when more than 20.0% of the kernels pass through the No. 8 slotted sieve.

1. Set up the Carter dockage tester as follows:

Feed control	# 6
Air control	# 6
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 5 buckwheat
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control briefly to dislodge kernels.
6. Turn off the Carter dockage tester.
7. Snap the retainer rod of the aspiration pan lightly to loosen material gathered on the screen.
8. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material other than whole kernels of buckwheat removed by the No. 25 riddle
- Material removed through the bottom No. 5 buckwheat sieve
- Material removed by aspiration other than whole sound kernels of buckwheat
- Soft earth pellets handpicked from the clean sample
- Material removed by cleaning for grade improvement

Commercially clean

Samples exiting primary elevators are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Any whole domestic buckwheat removed in dockage assessment is returned to the clean sample. Dockage is reduced by up to

- 0.3% for fine attritional material which passes through the No. 4.5 round-hole sieve
- 0.5% for broken or hulled buckwheat removed by aspiration or passing through the No. 5 buckwheat or the No. 6 slotted sieve

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.
2. Sieve the sample by hand using the No. 6 buckwheat hand sieve.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Small buckwheat

Material to be removed	Equipment	Effect on composition of dockage
Foreign material	No. 6 buckwheat hand sieve	The material passing through the sieve is included in the dockage

Assessing dockage in large buckwheat

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Buckwheat is considered large when 20.0% or less of the kernels pass through the No. 8 slotted sieve.

1. Set up the Carter dockage tester as follows:

Feed control	# 7
Air control	# 6
Riddle	None
Top sieve	No. 15 round-hole
Centre sieve	No. 6 slotted
Bottom sieve	Blank tray
Sieve cleaner control	On

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the Carter dockage tester.
6. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

- Material other than whole kernels of buckwheat passing over the No. 15 round-hole sieve
- Material passing through the No. 6 slotted sieve
- Material removed by aspiration other than whole sound kernels of buckwheat
- Soft earth pellets handpicked from the cleaned sample
- Material removed by cleaning for grade improvement

Commercially clean

Samples exiting primary elevators are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Any whole domestic buckwheat removed in dockage assessment is returned to the clean sample. Dockage in shipments is reduced by up to

- 0.3% for fine attritional material which passes through the No. 4.5 round-hole sieve
- 0.5% for broken or hulled buckwheat removed by aspiration or passing through the No. 5 buckwheat or the No. 6 slotted sieve

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.
2. Sieve the sample by hand using the No. 8 slotted hand sieve.

   ▲ **Important:** When using a hand sieve, move the sieve from left to right 30 times, in a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Large buckwheat

Material to be removed	Equipment	Effect on composition of dockage
Foreign material	No. 8 slotted hand sieve	The material passing through the sieve is included in the dockage

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:

   - The percentage by gross weight to the nearest 0.1% and the grade of buckwheat.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Buckwheat, No. 1 Canada
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of buckwheat for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Cereal grains	50 g	250 g
Damage	10 g	50 g
Dehulled	10 g	50 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Immature	10 g	50 g
Matter other than cereal grains	50 g	250 g
Odour	working sample	working sample
Sclerotinia sclerotiorum	500 g	working sample
Size	250 g	250 g
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Cereal grains (CGRN)

Cereal grains in buckwheat include wheat, rye, triticale, barley, oats and groats, including wild oat groats that remain in the clean sample.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Buckwheat, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Buckwheat, Sample Condemned*.

Damage (DMG)

Damage includes all dehulled seeds and seeds that are frosted, mouldy, or otherwise unsound. The hull of damaged kernels collapses under pressure, as when rolled between the thumb and forefinger.

Dehulled (DHULL)

Dehulled buckwheat is buckwheat with its hulls removed.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Buckwheat, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Buckwheat, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt samples are samples that contain kernels that show any evidence of being charred or scorched by fire.

Immature (IM)

Immature kernels

- Do not contain a groat or have a severely shriveled groat
- Have a hull which collapses under pressure

Matter other than cereal grains (MOTCG)

Matter other than cereal grains includes weed seeds and other grains that are not readily removable and may include canola, peas, lentils, beans, corn, and other domestic or wild seeds that remain in the cleaned sample.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Buckwheat, Sample Canada (size) Account Odour*
A distinct heated odour	*Buckwheat, Sample Canada (size) Account Heated*
A distinct fireburnt odour	*Buckwheat, Sample Canada (size) Account Fireburnt*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Size

Size is evaluated using a No. 8 slotted sieve. The size, large or small, is added to the grade name; for example, *Buckwheat, No. 1 Canada Large*.

If the percentage of kernels passing through the No. 8 slotted sieve is . . .	Then the buckwheat is . . .
20.0 or less	Large
More than 20.0	Small

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only— if they do not crumble, they are considered *Stones.*
- Any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets are removed as dockage. See *Composition of dockage.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Buckwheat, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Buckwheat, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Buckwheat, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Buckwheat, Canada

Grade name	Stones %
No. 1 Canada	0.03
No. 2 Canada	0.03
No. 3 Canada	0.03

Basic grade:..... *Buckwheat, No. 2 Canada Large*
Reason for basic grade:..... 2.0% Dehulled

If the above sample contained	Grade in western Canada
0.06% stones	*Buckwheat, Rejected No. 2 Canada Large Account Stones*
3.0% stones	*Buckwheat, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Buckwheat, Canada

Grade name	Stones %
No. 1 Canada	0.03
No. 2 Canada	0.03
No. 3 Canada	0.03

Basic grade:..... *Buckwheat, No. 2 Canada Large*
Reason for basic grade:..... 2.0% Dehulled

If the above sample contained	Grade in eastern Canada
0.06% stones	*Buckwheat, Sample Canada Large Account Stones*
3.0% stones	*Buckwheat, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Any variety of buckwheat registered for production in Canada is eligible for the grade of No. 1 Canada.

Primary and export grade determination tables

Buckwheat, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada
Degree of soundness	Cool and sweet	Cool and sweet	May have a ground or grassy odour, not musty or sour
Minimum test weight kg/hL (g/0.5 L)	58 (285)	55 (270)	No minimum
Variety	Any variety of buckwheat registered under the *Seeds Act*	Any variety of buckwheat registered under the *Seeds Act*	Any variety of buckwheat

Note: The size may be added to the grade name

Buckwheat, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Dehulled %	1	2	5	*Buckwheat, Sample Canada (size) Account Damage*
Immature %	1.5	1.5	5.0	*Buckwheat, Sample Canada (size) Account Damage*
Total % Damage	4	8	20	*Buckwheat, Sample Canada (size) Account Damage*

Buckwheat, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Cereal grains %	1.0	2.5	5.0	*Buckwheat, Sample Canada (size) Account Admixture*
Ergot %	0.00	0.05	0.25	*Buckwheat, Sample Canada (size) Account Ergot*
Excreta %	0.01	0.01	0.01	*Buckwheat, Sample Canada (size) Account Excreta*
Matter other than cereal grains %	0.2	1.0	2.0	*Buckwheat, Sample Canada (size) Account Admixture*
Sclerotinia %	0.00	0.05	0.25	*Buckwheat, Sample Canada (size) Account Admixture*
Stones %	0.03	0.03	0.03	2.5% or less - **West** - *Buckwheat, Rejected (grade) (size) Account Stones*, or **East** - *Buckwheat, Sample Canada (size) Account Stones* Over 2.5% - *Buckwheat, Sample Salvage*
Total % Foreign material	1	3	5	*Buckwheat, Sample Canada (size) Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Any whole domestic buckwheat removed in dockage assessment is returned to the clean sample. Dockage in shipments is reduced by up to

- 0.3% for fine attritional material which passes through the No. 4.5 round-hole sieve
- 0.5% for broken or hulled buckwheat removed by aspiration or passing through the No. 5 buckwheat or the No. 6 slotted sieve

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

Instead of the allowance for broken seed in commercially clean shipments, a direct deduction of 0.2% is applied to establish net dockage for direct exports only.

Assessing dockage for small buckwheat

Follow the primary dockage assessment procedures, with the Carter dockage tester set as follows.

Feed control	#6
Air control	#3
Riddle	None
Top sieve	No. 5 buckwheat
Centre sieve	No. 4.5 round-hole
Bottom sieve	Blank tray
Sieve cleaner control	Off

Dockage consists of the following:

- Material other than whole domestic buckwheat which passes through the No. 5 buckwheat or the No. 6 slotted sieve, less fine attritional material, broken or hulled buckwheat constituting not more than 0.5% of the sample by weight
- Material in excess of grade tolerances which is handpicked from the cleaned sample, other than cereal grains
- Material removed by *Cleaning for grade improvement*

Assessing dockage for large buckwheat

Follow the primary dockage assessment procedures, with the Carter dockage tester set as follows.

Feed control	#6
Air control	#3
Riddle	None
Top sieve	No. 6 slotted
Centre sieve	No. 4.5 round-hole
Bottom sieve	Blank tray
Sieve cleaner control	Off

Dockage consists of the following

- Material other than whole domestic buckwheat that passes through the No. 6 slotted sieve, less fine attritional material, broken or hulled buckwheat constituting not more than 0.5% of the sample by weight
- Material in excess of grade tolerances which is removed by aspiration, other than whole domestic buckwheat
- Material in excess of grade tolerances which is handpicked from the cleaned sample, other than cereal grains
- Material removed by *Cleaning for grade improvement*

Grading

Buckwheat on export is graded in accordance with the primary and export grade determination tables

14. Sunflower seed

Classes **14-3**
Classes 14-3

Determination of dockage **14-4**
Definitions 14-4
Dockage not reported 14-4
Normal cleaning procedures 14-4
Composition of dockage 14-5
Commercially clean (CCLN) 14-5
Optional analysis 14-6

Grading **14-7**
Important definitions 14-7
Net weight of sample 14-7
Hazardous substances in samples 14-7
Processed sample 14-7
Rounding rules 14-7
Non-registered varieties 14-7
Representative portion sizes for grading 14-8

Grading factors **14-9**
Contaminated grain 14-9
Damage (DMG) 14-9
Dehulled (DHULL) 14-10
Earth pellets (EP) 14-10
Ergot (ERG) 14-10
Excreta (EXCR) 14-10
Extraneous material 14-10
Fertilizer pellets (FERT PLTS) 14-10
Fireburnt (FBNT) 14-10
Foreign material (FM) 14-10
Head rot damage (HEAD ROT) 14-11
Heated, rotted or mouldy (HTD) 14-11
Insect damage (I DMG) 14-11
Odour (ODOR) 14-12
Other grains (OGS) 14-12
Sclerotinia sclerotiorum (SCL) 14-12
Soft earth pellets (SEP) 14-12
Stones (STNS) 14-13
Test weight (TWT) 14-15
Treated seed and other chemical substances 14-15
Variety (VAR) 14-15
Very immature seeds (VIM SDS) 14-15

Primary and export grade determination tables **14-16**
Sunflower Seed, Canada Confectionery (CAN), standard of quality 14-16
Sunflower Seed, Canada Confectionery (CAN), damage 14-16
Sunflower Seed, Canada Confectionery (CAN), foreign material included in dockage 14-16
Sunflower Seed, Canada Oil (CAN), standard of quality 14-17
Sunflower Seed, Canada Oil (CAN), damage 14-17

Sunflower Seed, Canada Oil (CAN), foreign material included in dockage 14-17

Export shipments 14-18
Commercially clean (CCLN) 14-18
Not commercially clean (NCC) 14-18
Grading 14-18

Classes

Classes

There are two classes of sunflower seeds: Confectionary and Oil.

- Confectionary sunflower seeds typically have dark grey hulls with whitish portions along the edges, or white stripes or blotches. They are larger than oil sunflower seeds.
- Oil sunflower seeds have hulls that are almost solid black in colour, although faint stripes may be visible. They are smaller than confectionary sunflower seeds.

The class of sunflower seed forms part of the grade name; for example, Sunflower seed, No. 1 Canada Confectionary.

The method of determining the class of sunflower seed is by the size and colour of the sunflower seed hull.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Sunflower Seed, Sample Canada Account Fireburnt
- Sunflower Seed, Sample Salvage
- Sunflower Seed, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 7 # 9 for large-seeded varieties
Air control	# 5 # 7 for large-seeded varieties
Riddle	none
Top sieve	none
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner control	none

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Sieve portions of approximately 250 grams at a time.

4. Nest the No. 24 or No. 18 round-hole sieve over one of the following sieves, depending on the size of the seeds:
   - the No. 10 round-hole sieve
   - the No. 6 buckwheat sieve
5. Handpick from the material remaining on top of the No. 24 or No. 18 round-hole sieve all whole or broken sunflower seeds. Return them to the portion passing through the No. 24 or No. 18 round-hole sieve and remaining on top of the No.10 round-hole or No. 6 buckwheat sieve.
6. Pass through the Carter dockage tester the material which has passed through the No. 24 or No. 18 round-hole sieve and remains on top of the No. 10 round-hole sieve (or the No. 6 buckwheat sieve).
7. Handpick whole sound sunflower seeds from the material removed by aspiration and return them to the cleaned sample.
8. Using a Boerner-type divider, divide a portion of approximately 250-g.
9. Handpick the 250-g portion for inseparable material including broken hulls. Determine what components of the handpicked inseparable material will be considered dockage as directed under *Composition of dockage*

   Note: At this point the handpicked 250-g portion should be used to determine test weight.
10. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

- Material removed by either the No. 24 or No. 18 round-hole sieve, except sound whole sunflower seeds
- Material removed by aspiration, except sound whole sunflower seeds
  Note: Very immature seeds containing no meats are not considered sound.
- Material passing through either the No. 10 round-hole sieve or the No. 6 buckwheat sieve
- Coarse material handpicked from the sieved sample
- Soft earth pellets and other grains handpicked from the sieved sample up to 2.5%
- Sclerotinia present in the handpicked sample; up to 2% is treated as a grade determinant and also included in dockage.
  Note: In samples eligible for off-grades, other grains, sclerotinia and soft earth pellets are considered a grading factor and are not added to the dockage.

Commercially clean (CCLN)

Samples exiting primary elevators with dockage levels up to 5.0% are considered commercially clean.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of sunflower seed.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

     Example
     95.0% Sunflower Seed, No. 1 Canada Confectionary
     4.0% Domestic Mustard Seed, No. 1 Canada Oriental
     1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations sample as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion sizes for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of sunflower seed for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Damage	25 g	100 g
Dehulled	25 g	100 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Heated, rotted, mouldy	50 g	100 g
Head rot (hulls)	25 g	100 g
Head rot (seeds)	5 g	25 g
Insect damage	50 g	100 g
Odour	working sample	working sample
Other grains	100 g	250 g
Sclerotinia sclerotiorum	250 g	working sample
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample
Very immature seeds	25 g	100 g

Grading factors

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Sunflower Seed, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Sunflower Seed, Sample Condemned*.

Damage (DMG)

Damaged seeds show at least one of following characteristics:

- Head rot damage
- Heated, rotted or mouldy
- Very immature
- Insect-damaged
- Otherwise materially damaged

Dehulled (DHULL)

Hulled seeds are broken and whole seeds that are without hulls.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Sunflower Seed, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Sunflower Seed, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt seeds are those that show any signs of being charred or scorched by fire.

Foreign material (FM)

Foreign material in sunflower seed includes other grains, sclerotinia and stones.

Head rot damage (HEAD ROT)

Head rot is damage most frequently caused by sclerotinia head rot disease.

Damage includes

- Hulls with 50% or more of the surface covered by white patches
- Seeds that are off colour, e.g., tan to dark brown
- Seeds that may contain small black sclerotia

Procedures

1. Using a Boerner-type divider, divide a representative portion for hulls.
2. Examine the portion and remove hulls with white patches covering 50% or more of the hull.
3. Divide the remaining representative portion for a subsample not less than 5 g.
4. Remove the hulls and examine the seeds for off-colour and the presence of sclerotia.

Heated, rotted or mouldy (HTD)

Heated seeds have the colour and or odour typical of seeds that have heated in storage or have been damaged by artificial drying.

Procedures

1. Pass the representative portion of the clean sample through a barley pearler for 3 to 5 seconds.
2. Separate heated, rotted or musty kernels from sound kernels.
3. Heated seeds of other grains are included in the tolerance for *Heated*

If you are unsure whether the kernel is heated, rotted or musty, cut the seed lengthwise and examine the exposed meat. Brown-coloured meat is considered to be heated.

Insect damage (I DMG)

Insect-damaged seeds have hull perforations of any size caused by insects and include any hulled seeds which have been bored or chewed by insects.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Sunflower, Sample Canada Account Odour*
An excessive heated odour	*Sunflower, Sample Canada Account Heated*
An excessive fireburnt odour	*Sunflower, Sample Canada Account Fireburnt*

Other grains (OGS)

Other grains are any other grains that are not removed during cleaning. Other grains are considered a grading factor and are added to the dockage.

In samples eligible for off-grades, other grains are considered a grading factor and are not added to the dockage.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

In samples eligible for off-grades, sclerotia are considered a grading factor and are not added to the dockage.

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

In samples eligible for off-grades, soft earth pellets are considered a grading factor and are not added to the dockage.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of the cleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Sunflower Seed, Sample Canada Account Admixture*.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Sunflower Seed, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Sunflower Seed, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Sunflower Seed, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Sunflower Seed, Canada, Oil

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.1

Basic grade:..... *Sunflower Seed, No. 1 Canada, Oil*

If the above sample contained	Grade in western Canada
0.2% stones	*Sunflower Seed, Rejected No. 1 Canada Oil Account Stones*
3.0% stones	*Sunflower Seed, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Sunflower Seed, Canada, Oil

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.1

Basic grade:..... *Sunflower Seed, No. 1 Canada, Oil*

If the above sample contained	Grade in eastern Canada
0.2% stones	*Sunflower Seed, Sample Canada Account Stones*
3.0% stones	*Sunflower Seed, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Sunflower seed is graded according to end use, either confectionary or oil.

On written request, the name of the variety as described by the owner or shipper may be shown as a notation in the remarks section of a certificate; for example, Said to be Commander variety.

Very immature seeds (VIM SDS)

Very immature seeds are whole sunflower seeds that contain no meat.

Procedures

1. Using a Boerner-type divider, divide a representative portion.
2. Separate whole shrunken seed kernels from sound kernels.
3. Determine the percentage of seeds that do not contain meat by either pressing the seed on a hard surface with finger pressure or by manually opening the seed.
4. Very immature seeds are included in the percentage of damaged seeds for grade determination.

Primary and export grade determination tables

Sunflower Seed, Canada Confectionery (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Degree of soundness	Well matured and sweet	Reasonably well matured and sweet	
Minimum test weight kg/hL (g/0.5 L)	31 (155)	29 (144)	*Sunflower Seed, Sample Canada Account Light Weight*
Variety	Any variety of confectionary sunflower registered under the *Seeds Act*	Any variety of confectionary sunflower	
Dehulled seeds %	5	5	*Sunflower Seed, Sample Canada Account Dehulled*

Sunflower Seed, Canada Confectionery (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Head rot %	2	5	*Sunflower Seed, Sample Canada Account Damage*
Heated %	0.5	1.0	*Sunflower Seed, Sample Canada Account Heated*
Insect damage %	2	4	*Sunflower Seed, Sample Canada Account Insect Damage*
Total % Damage	4	8	*Sunflower Seed, Sample Canada Account Damaged*

Sunflower Seed, Canada Confectionery (CAN), foreign material included in dockage

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Excreta %	0.01	0.01	*Sunflower Seed, Sample Canada Account Excreta*
Other grains %	2.5	2.5	*Sunflower Seed, Sample Canada Account Admixture*
Sclerotinia %	1	2	*Sunflower Seed, Sample Canada Account Admixture*
Soft earth pellets %	2.5	2.5	*Sunflower Seed, Sample Canada Account Admixture*
Stones %	0.1	0.1	2.5% or less - *Sunflower Seed, Rejected (grade) Account Stones*, or *Sunflower Seed, Sample Canada Account Stones* Over 2.5% - *Sunflower Seed, Sample Salvage*

Sunflower Seed, Canada Oil (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Degree of soundness	Well matured and sweet	Reasonably well matured and sweet	
Minimum test weight kg/hL (g/0.5 L)	35 (169)	31 (148)	*Sunflower Seed, Sample Canada Account Light Weight*
Variety	Any variety of oil sunflower registered under the *Seeds Act*	Any variety of oil sunflower	
Dehulled seeds %	5	5	*Sunflower Seed, Sample Canada Account Dehulled*

Sunflower Seed, Canada Oil (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Head rot %	2	5	*Sunflower Seed, Sample Canada Account Damage*
Heated %	0.5	1.0	*Sunflower Seed, Sample Canada Account Heated*
Insect damage %	2	4	*Sunflower Seed, Sample Canada Account Insect Damage*
Total % Damage	5	10	*Sunflower Seed, Sample Canada Account Damaged*

Sunflower Seed, Canada Oil (CAN), foreign material included in dockage

Grading factor	No. 1 Canada	No. 2 Canada	Grade, if No. 2 specs not met
Excreta %	0.02	0.02	*Sunflower Seed, Sample Canada Account Excreta*
Other grains %	2.5	2.5	*Sunflower Seed, Sample Canada Account Admixture*
Sclerotinia %	1	2	*Sunflower Seed, Sample Canada Account Admixture*
Soft earth pellets %	2.5	2.5	*Sunflower Seed, Sample Canada Account Admixture*
Stones %	0.1	0.1	2.5% or less - *Sunflower Seed, Rejected (grade) Account Stones*, or *Sunflower Seed, Sample Canada Account Stones* Over 2.5% - *Sunflower Seed, Sample Salvage*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments with dockage levels up to 5.0% are considered commercially clean. Dockage is reported to the nearest 0.1%.

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only. Dockage is assessed using procedures for primary samples.

Grading

Sunflower seed on export is graded in accordance with primary and export grade determination tables.

15. Safflower seed

Determination of dockage **15-2**
Definitions 15-2
Dockage not reported 15-2
Normal cleaning procedures 15-2
Composition of dockage 15-3
Commercially clean 15-3
Optional analysis 15-3

Grading **15-4**
Important definitions 15-4
Net weight of sample 15-4
Hazardous substances in samples 15-4
Processed sample 15-4
Rounding rules 15-4
Non-registered varieties 15-4
Representative portion for grading 15-5

Grading factors **15-6**
Contaminated grain 15-6
Damage (DMG) 15-6
Dehulled (DHULL) 15-6
Earth pellets (EP) 15-7
Empty hulls (HULLS) 15-7
Excreta (EXCR) 15-7
Extraneous material 15-7
Fertilizer pellets (FERT PLTS) 15-7
Foreign material (FM) 15-7
Heated (HTD) 15-7
Matter other than cereal grains (MOTCG) 15-8
Odour (ODOR) 15-8
Other grains (OGRN) 15-8
Rotted (ROT) 15-8
Soft earth pellets (SEP) 15-8
Stones (STNS) 15-9
Treated seed and other chemical substances 15-11
Variety (VAR) 15-11

Primary and export grade determination tables **15-12**
Safflower Seed, Canada (CAN), standard of quality 15-12
Safflower Seed, Canada (CAN), damage 15-12
Safflower Seed, Canada (CAN), foreign material 15-12

Export shipments **15-13**
Commercially clean (CCLN) 15-13
Not commercially clean (NCC) 15-13
Grading 15-13

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Safflower Seed, Sample Canada Account Fireburnt
- Safflower Seed Sample Salvage
- Safflower Seed, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 7
Air control	# 7
Riddle	none
Top sieve	blank
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Sieve portions of approximately 250 grams at a time.
4. Sift the sample over a No. 15 round-hole sieve nested over a No. 6 slotted sieve or a No. 6 buckwheat sieve or both, with a blank sieve on the bottom.
5. Turn on the Carter dockage tester.
6. Pour into the hopper the part of the sample that has passed through the No. 15 round-hole sieve.

7. From the material remaining on the top of the No. 15 round-hole sieve, handpick all whole or broken safflower seeds and return them to the cleaned sample.
8. Determine dockage, using the list that follows, under *Composition of dockage.*

Composition of dockage

- Material removed by the No. 15 round-hole sieve, except sound whole safflower seeds
- Material removed by the No. 6 slotted, the No. 6 buckwheat sieve, or both
- Material removed by aspiration, except sound whole safflower seeds
- Soft earth pellets handpicked from the clean sample constituting up to 2.5% of the sample by weight—if the percentage of soft earth pellets is 2.5% or more, soft earth pellets becomes a grading factor.

Commercially clean

Samples exiting primary elevators defined as commercially clean may contain up to 2.5% by weight of dockage.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of safflower seed.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

     Example
     95.0% Safflower Seed, No. 1 Canada
     4.0% Domestic Mustard Seed, No. 1 Canada Oriental
     1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of safflower seed for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Damage	25 g	100 g
Dehulled	25 g	100 g
Empty hulls	100 g	250 g
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Heated	100 g	250 g
Matter other than cereal grains	100 g	250 g
Odour	working sample	working sample
Other grains	100 g	250 g
Rotted	50 g	100 g
Soft earth pellets	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Safflower Seed, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Safflower Seed, Sample Condemned*.

Damage (DMG)

Damaged seeds are frosted, green, broken, heated, insect-damaged or otherwise unsound.

Dehulled (DHULL)

Intact safflower seeds are called “achenes” which consists of the hull containing the seed. Dehulled seeds are broken or whole seeds without hulls.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Empty hulls (HULLS)

Intact safflower seeds are called “achenes” which consists of the hull containing the seed. Empty hulls are achenes with intact hulls but which contain no seeds. This also includes hulls having less than one-third of the seed attached.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Safflower Seed, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Safflower Seed, Sample Condemned.*

Foreign material (FM)

Foreign material is anything other than safflower that remains in the sample after the removal of dockage. Some types of foreign material have separate tolerances.

Heated (HTD)

Heated seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Heated kernels include kernels discoloured from artificial drying, but not charred kernels. Heated seeds of other grains are included in the tolerance for *Heated*

Matter other than cereal grains (MOTCG)

Matter other than cereal grains refers to weed seeds and other grains that are not readily removable and may include

- Canola, peas, lentils, beans, corn, other domestic or wild seeds
- Ergot and sclerotinia sclerotiorum

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Safflower Seed, Sample Canada, Account Odour*
An excessive heated odour	*Safflower Seed, Sample Canada, Account Heated*
An excessive fireburnt odour	*Safflower Seed, Sample Canada, Account Fireburnt*

Other grains (OGRN)

Other grains in safflower seed include wheat, rye, triticale, barley, oats and groats, including wild oat groats that remain in the cleaned sample.

Rotted (ROT)

Seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Rotted seed is considered in combination with heat-damaged kernels.

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Soft earth pellets in safflower seed are considered as *Foreign material.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Safflower Seed, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Safflower Seed, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Safflower Seed, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Safflower Seed, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.1
No. 3 Canada	0.1

Basic grade:..... *Safflower Seed, No. 2 Canada*
Reason for basic grade:..... 4.0% Dehulled

If the above sample contained	Grade in western Canada
0.2% stones	*Safflower Seed, Rejected No. 2 Canada Account Stones*
3.0% stones	*Safflower Seed, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Safflower Seed, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.1
No. 3 Canada	0.1

Basic grade:..... *Safflower Seed, No. 2 Canada*
Reason for basic grade:..... 4.0% Dehulled

If the above sample contained	Grade in eastern Canada
0.2% stones	*Safflower Seed, Sample Canada Account Stones*
3.0% stones	*Safflower Seed, Sample Salvage*

Treated seed and other chemical substances

See Contaminated Grain.

Variety (VAR)

Safflower seed is graded without reference to variety.

Primary and export grade determination tables

Safflower Seed, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Well matured, good natural colour	Reasonably well matured, may be moderately weather-stained	Excluded from higher grades on account of weather-stained, may have the odour associated with low-quality seed but not distinctly sour, musty or rancid	
Variety	Any variety of safflower registered under the *Seeds Act*	Any variety of safflower registered under the *Seeds Act*	Any variety of safflower	
Empty hulls %	0.5	1.0	2.0	*Safflower Seed, Sample Canada Account Hulls*
Dehulled seeds %	2	5	8	*Safflower Seed, Sample Canada Account Dehulled*

Safflower Seed, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated %	0.0	0.0	1.0	*Safflower Seed, Sample Canada Account Heated*
Total % Damage	3	10	10	*Safflower Seed, Sample Canada Account Damaged*

Safflower Seed, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Excreta %	0.02	0.02	0.02	*Safflower Seed, Sample Canada Account Excreta*
Material other than cereal grains %	0.2	0.5	1.0	*Safflower Seed, Sample Canada Account Admixture*
Stones %	0.1	0.1	0.1	2.5% or less - **West** - *Safflower Seed, Rejected (grade) Account Stones* or **East** - *Safflower Seed, Sample Canada, Account Stones* Over 2.5%—*Safflower Seed, Sample Salvage*
Total % Foreign material	0.5	2.0	5.0	*Safflower Seed, Sample Canada Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments defined as commercially clean may contain up to 2.5% by weight of dockage.

Dockage is reported to the nearest 0.1%

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Safflower seed on export is graded in accordance with primary and export grade determination tables.

16. Peas

Classes, types and varieties **16-3**
Classes 📷 16-3

Determination of commercial cleanliness **16-4**

Determination of dockage **16-5**
Definitions 16-5
Dockage not reported 16-5
Normal cleaning procedures 16-5
Composition of dockage 16-6

Determination of foreign material in feed peas **16-7**
Optional analysis 16-7

Sizing of yellow peas **16-8**

Grading **16-9**
Important definitions 16-9
Net weight of sample 16-9
Gross weight of sample 16-9
Hazardous substances in samples 16-9
Rounding rules 16-9
Non-registered varieties 16-9
Processed sample 16-9
Standards 16-9
Representative portion sizes for grading 16-10

Grading factors **16-11**
Binburnt (BBT) 16-11
Bleached (BLCH) 16-11
Colour (CLR) 16-12
Contaminated grain 16-12
Cracked seed coats (CSDC) 16-13
Damage (DMG) 📷 16-13
Earth pellets (EP) 16-13
Ergot (ERG) 16-13
Excreta (EXCR) 16-13
Extraneous material 16-13
Fertilizer pellets (FERT PLTS) 16-14
Fireburnt (FBNT) 16-14
Foreign material (FM) 16-14
Heated (HTD) 16-14
Immature (IM) 16-14
Inert material (INERT MTL) 16-15
Insect damage (I DMG) 16-15
Insect parts (I PARTS) 16-15
Marsh spot 16-15
Odour (ODOR) 16-15
Other classes (OCL) 16-16
Other damage (ODMG) 16-16
Pink peas 16-16

Peas of other colours (POOCLR) 16-16
Pulses other than green, yellow or orange peas (PULSESOTGRYELORORGPEA) 16-16
Sclerotinia sclerotiorum (SCL) 16-16
Shrivelled (SHV) 16-16
Splits (SPLTS) 16-17
Stones (STNS) 16-17
Treated seed and other chemical substances 16-17
Variety (VAR) 16-17

Primary and export grade determination tables 16-18
Peas, Canada Green (CAN), standard of quality 16-18
Peas, Canada Green (CAN), other classes and bleached 16-18
Peas, Canada Green (CAN), foreign material 16-18
Peas, Canada Green (CAN), damage 16-18
Peas, Canada, other than Green (CAN), standard of quality 16-19
Peas, Canada, other than Green (CAN), foreign material 16-19
Peas, Canada, other than Green (CAN), damage 16-19
Peas, Canada Feed (CAN) 16-20

Export shipments 16-21

Classes, types and varieties

Classes

Peas are designated into two classes: Peas, Green and Peas, other than Green. The method of determining the class of a pea is by cotyledon colour and, in the case of Maple, Austrian, Vienna and Dun peas, seed coat and cotyledon colour.

Marrowfat peas are considered as Peas, other than Green.

The OGGG web version displays photos of the different types of peas.

Samples of peas are graded according to the grade determination tables for Peas, Green or Peas, other than Green unless designated by the shipper as feed peas, and then the feed pea grade determination table is used.

Determination of commercial cleanliness

Dockage is not assessed on pea samples that meet the commercially clean specifications set out in the procedures below. All samples must be analyzed to determine if they meet commercially clean specifications prior to dockage being assessed. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.2% of small seeds and coarse vegetable matter then dockage will be assessed using the procedures defined under *Determination of Dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures, and applying the specifications, listed below.

Foreign material in commercially clean peas is treated as a grading factor and not assessed as dockage.

Samples are considered to be commercially clean when:

- Containing 0.2% or less of any small seeds and coarse vegetable matter and,
- Pea hulls constitute 10% or less by weight of the split peas in the sample.

To determine if the sample is commercially clean, the following steps are to be completed:

1. Using a Boerner-type divider, divide the sample to obtain a representative portion of at least 1 kg.
2. Select the slotted sieve (No. 8, No. 9 or No.11) that will achieve maximum removal of splits with a minimum loss of whole peas. Nest the selected slotted sieve over a No. 4.5 round hole sieve. Sieve the sample, approximately 250 grams at a time, over the nested sieves.
3. Broken pea fragments that pass through the 4.5 round hole sieve are to be separated from the small seeds and included in the total percentage of split peas.
4. Small seeds passing through the No. 4.5 round hole are weighed and the percentage calculated.
5. The portion remaining on top of the slotted sieve and 4.5 round-hole sieve is handpicked to remove coarse vegetable matter and its percentage calculated.
6. The percentages of small seeds and coarse vegetable matter are added together to determine if the total meets the commercially clean specification.
7. Splits and pea hulls are separated from the entire sample. Determine if the pea hulls constitute 10% or less by weight of the split peas.

If any of the components exceed the allowable limits as defined above, the sample will become *not commercially clean* and dockage is assessed using procedures for primary samples. Dockage is reported to the nearest 0.1%.

Commercial cleanliness is not assessed in Feed peas.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Peas, Sample Canada (colour or variety) Account Fireburnt
- Peas Sample Salvage
- Peas, Sample Condemned
- Feed Peas, Canada
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.

   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

2. Sieve portions of approximately 250 grams at a time.

3. Sieve the sample over the round-hole sieve that will achieve maximum removal of dockage material, including coarse vegetable matter, grasshoppers, other insects and insect parts. Use one of the following sieves:

   - No. 20 round-hole
   - No. 21 round-hole
   - No. 22 round-hole
   - No. 24 round-hole

   Important: Return all pieces of peas or whole peas that remain on top of the round-hole sieve to the sample.

4. Sieve the sample over the slotted sieve that will achieve maximum removal of splits with minimum loss of whole peas. Use one of the following sieves:
    - No. 8 slotted
    - No. 9 slotted
    - No. 11 slotted
5. Handpick all coarse vegetable matter such as pods, stems, straw, thistle tops from the sieved sample.
6. Handpick all grasshoppers, other insects and insect parts from the sieved sample.

Composition of dockage

- All material removed by sieving or handpicking, including pea hulls, as defined in *Normal cleaning procedures*.
- Split peas removed through sieving. Split peas removed by sieves are handpicked from the dockage material and calculated as a percentage based on the gross weight of the sample. This portion is recorded as the percentage of splits in dockage

Determination of foreign material in feed peas

Foreign material in feed peas is defined as any material other than whole peas, broken peas or pea seed coats.

Procedures

1. Using a Boerner-type divider, divide the gross sample to obtain a representative portion.
2. Handpick the representative portion to remove all foreign material.

   Note: Any approved sieve may be used to expedite the determination of foreign material, however only material other than peas, broken peas and pea seed coats is assessed as foreign material.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:

   - The percentage by gross weight to the nearest 0.1% and the grade of peas.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Peas No. 1 Canada Yellow
   4.0% Peas Sample Canada Yellow Account Splits
   1.0% dockage

Sizing of yellow peas

In yellow peas only, if size is determined as small or large, then size becomes part of the grade name. If a sample does not meet the definition for large or small, it is graded without reference to size.

1. Using a Boerner-type divider, divide a representative portion of 250 g.
2. Sieve the representative portion over the No. 14 round-hole sieve.
3. Determine the portion remaining on top of No. 14 round-hole sieve.

<table>
<tr><td>95% or more remains on top of No. 14 round-hole sieve</td><td colspan="3">Less than 95% remains on top of No. 14 round-hole sieve</td></tr>
<tr><td rowspan="8">The sample is designated Large.

Example:
Peas, No.2 Canada Yellow Large</td><td colspan="3">1. Recombine the sample.</td></tr>
<tr><td colspan="3">2. Sieve the sample over the No. 15 round-hole and No. 11 round-hole sieves.</td></tr>
<tr><td colspan="3">3. Determine the portion passing through the No. 15 round-hole sieve.</td></tr>
<tr><td colspan="2">90% or more passes through the No. 15 round-hole sieve</td><td>Less than 90% passes through</td></tr>
<tr><td colspan="2">Determine the amount that remains on top of the No. 11 round-hole sieve.</td><td rowspan="3">Graded without reference to size

Example:
Peas, No.2 Canada Yellow</td></tr>
<tr><td>95% or more</td><td>Less than 95%</td></tr>
<tr><td>The sample is designated Small

Example:
Peas, No.2 Canada Yellow Small</td><td>Graded without reference to size

Example:
Peas, No. 2 Canada Yellow</td></tr>
</table>

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is called the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading of peas for human consumption refer to percentages of the cleaned sample, or the net weight.

Gross weight of sample

The sample as it arrives is referred to as the uncleaned sample. Its weight is the gross weight of the sample.

Note: Percentages by weight for grading feed peas refer to percentages of the uncleaned sample, or the gross weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List.

Representative portion sizes for grading

All grading of human consumption peas is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

All grading of feed peas is done on representative portions divided down from the gross sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of peas for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Binburnt	100 g	500 g
Bleached	100 g	250 g
Colour	working sample	working sample
Cracked seed coats	50 g	100 g
Damage	50 g	100 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	250 g	working sample
Heated	250 g	working sample
Inert material	working sample	working sample
Insect damage	50 g	100 g
Insect parts	working sample	working sample
Marsh spot	50 g	100 g
Odour	working sample	working sample
Other damage	50 g	100 g
Peas of other colours, classes	100 g	500 g
Pink Peas	50 g	100 g
Shrivelled	50 g	100 g
Splits	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Images available on web version

Binburnt (BBT)

Binburnt refers to peas that are blackened as a result of severe heating in storage. There is a single tolerance in feed peas for the total of heated and binburnt.

Bleached (BLCH)

Bleached applies to green peas only.

Green peas are considered bleached if one-eighth or more of the surface of the cotyledon is bleached to a distinct yellow colour which is in marked contrast to its natural colour.

Procedures

1. Examine a representative portion of the cleaned sample for any distinctly bleached or suspect bleached green peas.
2. Remove the seed coat from suspect seeds to determine the size of the bleached area on the cotyledons.

The bleached guide may be used to assist in the determination of bleached peas. Industry members may contact the Canadian Grain Commission at QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Colour (CLR)

Colour as a grade determinant is assessed after the removal of damaged peas and peas of other colours.

If peas are	Colour is . . .
A bright, normal colour, lightly earth tagged or lightly stained	Good
Moderately immature, moderately earth tagged or stained	Fair
Not meeting the definition of Fair colour	Off colour

If a sample of yellow peas contains . . .	The sample is . . .
Green peas	Considered damaged only if peas are damaged from another cause
Whole or split peas which are distinctly green throughout as a result of immaturity or variety	*Peas of other colours*
Immature yellow peas	Considered damaged only if peas are damaged from another cause
Immature, but not distinctly green, peas	Not considered damaged, but taken into account in the general evaluation of the sample

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Peas, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Peas, Sample Condemned*.

Cracked seed coats (CSDC)

Cracked seed coats includes

- Peas with cracked seed coats—if the peas are otherwise damaged, they are included in the tolerance for damage, not cracked seed coats
- Peas with all or part of the seed coat removed
- Broken peas with less than one-fourth of the pea broken off—broken peas with more than one-fourth of the pea broken off are considered damaged

Damage (DMG)

Damaged peas include

- Split or broken peas where more than one-fourth of the pea is broken off
- Whole peas that are sprouted, heated, shrivelled, damaged by insects, badly deteriorated or discoloured by weather or by disease, or that are otherwise damaged in a way that seriously affects their appearance or quality

Earth pellets (EP)

See *Foreign material.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies that have a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Peas, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Peas, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt kernels have been charred or scorched by fire. No fireburnt kernels are allowed in peas, split peas or feed peas.

Foreign material (FM)

Foreign material is any material other than peas, broken peas or pea seed coats. Foreign material is not a grading factor in feed peas.

Heated (HTD)

Peas or split peas that have dull seed coats and discoloured cotyledons ranging from light tan to dark brown are considered heated.

Procedures

1. Pick out heated peas by hand
2. Cut the kernels to expose the cotyledon
3. Heated seeds of other grains are included in the tolerance for *Heated*

If peas are . . .	Grading is . . .
Lightly damaged, with tan-coloured cotyledons and distinct heated odour	Heated
Otherwise	Damaged

Immature (IM)

Immature peas are not considered damaged but taken into account in the general evaluation of the sample.
See *Colour*

Inert material (INERT MTL)

Inert material refers to mineral matter such as stones, coal shale and hard and soft earth pellets.

Insect damage (I DMG)

Insect damage in peas or split peas refers to damage caused by insects such as weevils.

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.
If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain* Sample Account Odour.

Marsh spot

This nutritional disorder, caused by manganese deficiency in the soil, results in dark reddish brown spots or cavities on the inner surface of the cotyledons. Marsh spot is considered *Other damage* in peas.

Procedures

Pearl the representative portion to split and expose the inner surface of the cotyledon.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is....	**Then the grade is....**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Peas, Sample Canada (colour and size) Account Odour*
An excessive heated odour	*Peas, Sample Canada (colour and size) Account Heated*
An excessive fireburnt odour	*Peas, Sample Canada (colour and size) Account Fireburnt*

Other classes (OCL)

Peas are designated into two classes, Peas, Green and Peas, other than Green. The method of determining the class of a pea is by cotyledon colour and, in the case of Maple, Austrian, Vienna and Dun peas, seed coat and cotyledon colour.
Peas of other classes are assessed in Green peas only. For Peas, other than Green, see *Peas of other colours.*

Other damage (ODMG)

Other damage is

- Any damage other than splits, insect damage, heated or shrivelled
- Any discolouration or physical damage on the face of the cotyledon

Pink peas

Pink peas refers to staining caused by the bacteria *Erwinia Rhapontici*

Food peas

- Surface discolouration is to be considered in the overall colour assessment of the sample
- Discolouration that extends into the cotyledon is to be considered damaged

Feed peas

- Colour is not a factor

Care must be taken in assessing these pink peas as there are pink seed treatments for peas being used. Questionable samples are to be handled as per the ISO national procedure for handling suspect contaminated seeds.

Peas of other colours (POOCLR)

Colour is determined by the cotyledon colour and, in the case of Maple, Austrian and Dun peas, seed coat and cotyledon colour. *Peas of other colours* includes any whole and split peas that are obviously of another colour.

Pulses other than green, yellow or orange peas (PULSESOTGRYELORORGPEA)

In feed peas, pulses other than green, yellow or orange peas refers specifically to maple and marrowfat peas. These are not considered as part of foreign material. Other pulses such as beans, chickpeas and lentils are included in foreign material.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior. See *Foreign material.*

Shrivelled (SHV)

Shrivelled peas are distinctly distorted and shrunken, or have a severely dimpled surface.

Splits (SPLTS)

Splits include split peas, pea hulls, split peas of other colours, broken pieces that are less than three-quarters of the whole seed, and cotyledons that are loosely held together by the seed coat.

Stones (STNS)

See *Foreign Material*

Treated seed and other chemical substances

See Contaminated Grain.

Variety (VAR)

Peas are designated into two classes: Peas, Canada Green and Peas, Canada other than Green. The method of determining the class of a pea is by cotyledon colour and, in the case of Maple, Austrian, Vienna and Dun peas, seed coat and cotyledon colour.

Note: Marrowfat peas are considered as Peas, Canada other than Green.

Procedures

Samples of peas are graded according to the grade determination tables for Peas, Canada Green or Peas, Canada other than Green unless designated by the shipper as feed peas, and then the feed pea grade determination table is used.

Note: On written request, the variety is shown as part of the grade name, for example, *Peas, No. 2 Canada, Trapper.*

▲ **Important**: State “Varietal purity not guaranteed” in the remarks section of grading certificates issued using a varietal name.

Primary and export grade determination tables

Peas, Canada Green (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada
Colour	Good natural colour	Fair colour	Off-colour
Variety	Any variety of peas registered under the *Seeds Act*	Any variety of peas registered under the *Seeds Act*	Any variety of peas

Note: The colour is added to the grade name. Alternatively, upon written request, the variety name will be added to the grade name and the statement "Varietal purity not guaranteed" shown in the remarks section of any certificate issued.

Peas, Canada Green (CAN), other classes and bleached

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Other classes %	0.5	1.0	2.0	10.0% or less - *Peas, Sample Canada (Green or variety) Account Mixed Colours* Over 10.0% - *Peas, Sample Canada Account Mixed Colours*
Bleached %	2.0	3.0	5.0	*Peas, Sample Canada (Green* or *variety) Account Bleached*
Total % Other classes and bleached	2.0	4.0	7.0	*Peas, Sample Canada (Green* or *variety) Account Mixed Colours and Bleached*

Peas, Canada Green (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Peas, Sample Canada (Green or variety) Account Ergot*
Excreta %	0.01	0.01	0.01	*Peas, Sample Canada (Green or variety), Account Excreta*
Insect parts %	0.02	0.02	0.02	*Peas, Sample Canada (Green or variety) Account Admixture*
Total % Foreign material	0.1	0.2	0.5	*Peas, Sample Canada (Green or variety) Account Admixture*

Peas, Canada Green (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated %	0.0	0.1	0.5	*Peas, Sample Canada (Green or variety) Account Heated*
Insect damage %	0.3	0.8	2.5	*Peas, Sample Canada (Green* or *variety) Account Insect Damage*
Other damage %	2	4	10	*Peas, Sample Canada (Green* or *variety) Account Damage*
Shriveled %	2	4	8	*Peas, Sample Canada (Green* or *variety) Account Shriveled*
Splits %	1	3	5	*Peas, Sample Canada (Green* or *variety) Account Splits*
Total % Damage	3	5	12	*Peas, Sample Canada (Green* or *variety) Account Damage*
Cracked seed coats including splits %	5	8	13	*Peas, Sample Canada (Green or variety) Account Cracked Seed Coats*

Peas, Canada, other than Green (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Colour	Good natural colour	Fair colour	Fair colour	Off-colour	
Variety	Any variety of peas registered under the *Seeds Act*	Any variety of peas registered under the *Seeds Act*	Any variety of peas registered under the *Seeds Act*	Any variety of peas	
Peas of other colours %	1.0	2.0	2.0	3.0	*Peas, Sample Canada (Yellow* or *variety) Account Mixed Colours*

Note: The colour is added to the grade name. Alternatively, upon written request, the variety name will be added to the grade name and the statement "Varietal purity not guaranteed" shown in the remarks section of any certificate issued.

Peas, Canada, other than Green (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	0.05	*Peas, Sample Canada (Yellow* or *variety) Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Peas, Sample Canada (Yellow or variety), Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	*Peas, Sample Canada (Yellow or variety), Account Admixture*
Total % Foreign material	0.2	0.5	0.5	1.0	*Peas, Sample Canada (Yellow or variety) Account Admixture*

Peas, Canada, other than Green (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated %	0.00	0.05	0.05	0.20	*Peas, Sample Canada (Yellow or variety) Account Heated*
Insect damage %	1.0	1.5	1.5	4.0	*Peas, Sample Canada (Yellow or variety) Account Insect Damage*
Other damage %	3	5	5	10	*Peas, Sample Canada (Yellow or variety) Account Damage*
Shriveled %	3	5	5	7	*Peas, Sample Canada (Yellow or variety) Account Shriveled*
Splits %	1	3	5	5	*Peas, Sample Canada (Yellow or variety) Account Splits* Over 5% and over 3% other colours - *Peas, Sample Canada, Account Mixed Colours and Splits*
Total % Damage	3	5	9	10	*Peas, Sample Canada (Yellow or variety) Account Damage*
Cracked seed coats including splits %	5	10	13	15	*Peas, Sample Canada (Yellow or variety) Account Cracked Seed Coats*

Peas, Canada Feed (CAN)

Grading factor	Canada Feed Peas	Grade, if Feed peas specs not met
Fireburnt %	0.0	*Peas, Sample Canada Feed Account Fireburnt*
Heated and binburnt %	1	*Peas, Sample Canada Feed Account Heated*
Pulses other than green, yellow or orange peas %	5	*Peas, Sample Canada Feed Account Pulses Other than Green, Yellow or Orange Peas*
Inert material %	1	*Peas, Sample Canada Feed Account Inert Material*
Ergot %	0.05	*Peas, Sample Canada Feed Account Ergot*
Excreta %	0.02	*Peas, Sample Canada Feed Account Excreta*

Export shipments

Peas, on export, are graded in accordance with standard prints and the primary and export grade determination tables. Foreign material in commercially cleaned peas is treated as a grading factor and not assessed as dockage. Cargoes containing dockage may not be shipped except with permission from the CGC.

Commercially clean (CCLN)

Samples are considered to be commercially clean when:

- Containing 0.2% or less of any small seeds and coarse vegetable matter and,
- Pea hulls constitute 10% or less by weight of the split peas in the sample.

To determine if the sample is commercially clean, the following steps are to be completed:

1. Using a Boerner-type divider, divide the sample to obtain a representative portion of at least 1000 grams
2. Select the slotted sieve (No. 8, No. 9 or No. 11) that will achieve maximum removal of splits with a minimum loss of whole peas. Nest the selected slotted sieve over a No. 4.5 round hole sieve. Sieve the sample, approximately 250 grams at a time, over the nested sieves.
3. Broken pea fragments that pass through the 4.5 round hole sieve are to be separated from the small seeds and included in the total percentage of split peas.
4. Small seeds passing through the No. 4.5 round hole are weighed and the percentage calculated
5. The portion remaining on top of the slotted sieve is handpicked to remove coarse vegetable matter and its percentage calculated
6. The percentages of small seeds and coarse vegetable matter are added together to determine if the total meets the commercially clean specification
7. Splits and pea hulls are separated from the entire sample. Determine if the pea hulls constitute 10% or less by weight of the split peas

If any of the components exceed the allowable limits as defined above, the shipment becomes *not commercially clean* and dockage is assessed using procedures for primary samples. Dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Commercial cleanliness is not assessed in Feed peas.

17. Corn

Determination of dockage **17-2**
Definitions 17-2
Dockage not reported 17-2
Normal cleaning procedures: 17-2
Composition of dockage 17-3

Estimating test weight of well-matured corn after drying **17-4**

Grading **17-5**
Important definitions 17-5
Net weight of sample 17-5
Hazardous substances in samples 17-5
Processed sample 17-5
Rounding rules 17-5
Non-registered varieties 17-5
Representative portions for grading 17-6

Grading factors **17-7**
Blue eye mould (BEM) 17-7
Caramelized kernels 17-7
Classes 17-7
Contaminated grain 17-7
Cracked corn and foreign material (CCFM) 17-8
Damage (DMG) 17-8
Earth pellets (EP) 17-9
Excreta (EXCR) 17-9
Extraneous material 17-9
Fertilizer pellets (FERT PLTS) 17-9
Fireburnt (FBNT) 17-9
Foreign material (FM) 17-9
Heated (HTD) 17-10
Odour (ODOR) 17-10
Red streak (RSTRK) 17-10
Rotted (ROT) 17-11
Stones (STNS) 17-11
Test weight (TWT) 17-12
Treated seed and other chemical substances 17-12
Variety (VAR) 17-12

Primary and export grade determination tables **17-13**
Corn, Canada Western Yellow, White or Mixed (CW), standard of quality 17-13
Corn, Canada Western Yellow, White or Mixed (CW), damage 17-13
Corn, Canada Western Yellow, White or Mixed (CW), foreign material 17-13
Corn, Canada Eastern Yellow, White or Mixed (CE), standard of quality 17-14
Corn, Canada Eastern Yellow, White or Mixed (CE), damage 17-14
Corn, Canada Eastern Yellow, White or Mixed (CE), foreign material 17-14

Export shipments **17-15**
Grading 17-15
Cracked corn and foreign material (CCFM) 17-15

Determination of dockage

Definitions

In Eastern Canada the terms of delivery or terms of a contract will determine if dockage is to be assessed. In Western Canada dockage may only be assessed on tough, damp, moist or wet corn. The CGC will only assess dockage upon request. Dockage is assessed and recorded to the nearest 0.1%. Once dockage material has been removed it will not be reintroduced to the sample to determine the grade.

Cracked Corn and Foreign Material (CCFM) is a grading factor and will be assessed when determining the grade.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the manual.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Corn, Sample CE Account Fireburnt
- Corn, Sample Salvage
- Corn, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures:

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain hazardous substances.

Assess dockage before assessing test weight.

Procedures for normal cleaning of corn require

- No. 12 round-hole hand sieve for corn with 25% moisture or less
- No. 14 round-hole hand sieve for corn over 25% moisture

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1kg.
   - Unofficial samples shall be at least 1 kg.
2. Sieve approximately 250 g at a time on the appropriate hand sieve until all possible material has fallen through the sieve.
3. Handpick material remaining on top of the sieve as described under *Composition of dockage.*

Composition of dockage

- All material which passes through the No. 12 or No. 14 round-hole sieve
- All foreign material and pieces of cob handpicked from the sample, excluding stones

Estimating test weight of well-matured corn after drying

Note: Test weight is determined on corn prior to removal of cracked corn and foreign material. When the Terms of Delivery or terms of a contract state that dockage can be deducted then test weight is determined after the removal of dockage.

Corn samples that contain a high percentage of moisture typically show an increase in test weight after drying. Use the following table to predict the test weight of well-matured corn before drying.

▲ **Important:** This is only a guide, and works only with well matured corn. Samples should be checked yearly to ensure that the formula applies for that crop condition.

Moisture range	Amount to add	
	kg/hL	g/0.5 L
15.8 - 16.4	0.5	2.6
16.5 - 16.9	1.0	5.2
17.0 - 17.3	2.0	10.5
17.4 - 17.6	2.1	11.0
17.7 - 17.9	2.2	11.5
18.0 - 18.3	2.3	12.0
18.4 - 18.6	2.4	12.5
18.7 - 18.9	2.5	13.0

1. Find the moisture range for the test weight of the sample.
2. Add the amount for that moisture range in the appropriate units, either kg/hL or g/0.5 L.

▲ **Important**: Corn samples are not to be downgraded on the basis of an "estimated" test weight. Questionable samples must be dried by exposure and then have the test weight determined.

For example,
The moisture for the tested sample is 17.5%, and the test weight is in kg/hL.

Moisture range	Amount to add	
	kg/hL	g/0.5 L
17.4 - 17.6	2.1	11.0

Add 2.1 to the test weight in kg/hl.

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain. The Non-Registered Varieties of Chickpeas, Soybeans and Corn order is issued annually to allow non-registered varieties of corn to be graded higher than the lowest statutory grade.

Representative portions for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of corn for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Caramelized kernels	100 g	250 g
Classes	100 g	working sample
Cracked corn and foreign material	working sample	working sample
Damage	100 g	250 g
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Heated and rotted	100 g	working sample
Odour	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Images available on web version

Blue eye mould (BEM)

Germs of kernels appear dark blue with mould, or there may be just a visible mouldy blue streak under the hull of the germ. In the second case, peel back the hull from the germ to examine the germ.

Blue-eye mould is included in the tolerance for *Damage.*

Caramelized kernels

Caramelized kernels are kernels that were very immature when dried at a high temperature in a dryer, and the heat has turned the kernel to a scorched colour similar to that of heated kernels. The outer hull of the kernel may be peeled off showing a slightly damaged kernel inside. These kernels are considered *Damaged.*

Classes

Corn is classed as yellow, white, or mixed. The class forms part of the grade name; for example, *Corn, Sample CW Yellow Account Heated.*

Samples of yellow and white corn containing less than 95% of one class are designated *Mixed*; for example, *Corn No. 1 CE Mixed.*

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Corn, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Corn, Sample Condemned*.

Cracked corn and foreign material (CCFM)

Cracked corn and foreign material includes any of the following:

- All material including kernels and pieces of kernels of corn or any other grains which pass through a No. 12 round-hole sieve or, for samples with a moisture level over 25.0%, through the No. 14 round-hole sieve
- All foreign material other than stones handpicked from the sample, including pieces of cobs that were not removed by sieving

Procedures

▲ **Important:** Follow procedures for assessing dockage.

Note: Because breakage occurs during handling at terminal elevators, round down percentages by weight of CCFM to the nearest whole number on all officially sampled and inspected domestic or export shipments from a terminal elevator.

For example, a sample containing 4.7% CCFM by weight is recorded as containing 4% CCFM for grading purposes only on officially sampled and inspected shipments from a terminal elevator.

Damage (DMG)

Damaged kernels include whole kernels or pieces of kernels which are

- Affected by blue-eye mould and other types of moulds
- Sprouted
- Ground-damaged
- Weathered
- Diseased
- Frosted
- Scorched, from a dryer
- Heated, naturally, or from a dryer, or caramelized
- Rotted

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Cracked corn and foreign material.*

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Corn, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Corn, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Procedures

Samples of corn containing fireburnt kernels are graded *Corn, Sample CW/CE (class) Account /Fireburnt.*

Foreign material (FM)

See *Cracked corn and foreign material (CCFM).*

Heated (HTD)

Heated kernels have at least one of the following characteristics:

- Whole kernels or pieces of kernels which range in colour from amber to dark brown over the entire kernel
- Kernels which are totally discoloured by fermentation and show no natural colour on their crowns or backsides, or both
- The germ of the kernel is amber to dark brown and is severely puffed in the germ area when heated in a dryer
- Heated seeds of other grains are included in the tolerance for *Heated*

If kernels exhibit none of the above characteristics, but are not whole or sound, they are considered *Damaged.*

Note: Cracked corn and foreign material that is heated is included with heated corn for grade assessment.

Refer to the visual image guide for heated corn to assist in the determination of heated kernels. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request a copy of this guide.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Grains grading No. 1 through 4 must be cool and sweet. Corn grading No. 5 may have a slight odour associated with the low quality, but the odour cannot be sour or musty.

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Corn, Sample CW/CE Account Odour*
An excessive heated odour	*Corn, Sample CW/CE Account Heated*
An excessive fireburnt odour	*Corn, Sample CW/CE Account Fireburnt*

Red streak (RSTRK)

A condition in corn where reddish streaks appear on the kernels and is primarily cosmetic. Kernels are considered sound and not assessed as damage.

Rotted (ROT)

Rotted kernels are whole kernels or pieces of kernels which are visibly in advanced stages of decomposition and feel spongy under pressure. Rotted kernels are included in the percentage of heated kernels for grade assessment.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada samples of grain containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Corn*, *Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada samples of grain containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Corn, Sample CE (class) Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Corn, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Corn, Canada Western, White, Yellow or Mixed

Grade name	Stones %
No. 1 CW	0.15
No. 2 CW	0.15
No. 3 CW	0.15
No. 4 CW	0.15
No. 5 CW	0.15

Basic grade:..... *Corn, No. 2 CW Yellow*
Reason for basic grade:..... 3% Cracked corn and foreign material

If the above sample contained	Grade in Western Canada
0.5% stones	*Corn, Rejected No. 2 CW Yellow Account Stones*
3.0% stones	*Corn, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination table for
Corn, Canada Eastern, White, Yellow or Mixed

Grade name	Stones %
No. 1 CE	0.15
No. 2 CE	0.15
No. 3 CE	0.15
No. 4 CE	0.15
No. 5 CE	0.15

Basic grade:..... *Corn, No. 2 CE Yellow*
Reason for basic grade:..... 3% Cracked corn and foreign material

If the above sample contained	Grade in Eastern Canada
0.5% stones	*Corn, Sample CE Yellow Account Stones*
3.0% stones	*Corn, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Test weight on corn is determined prior to removal of cracked corn and foreign material. When the Terms of Delivery or terms of a contract state that dockage can be deducted, then test weight is determined after the removal of dockage.

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Corn is graded without reference to variety.

Primary and export grade determination tables

Corn, Canada Western Yellow, White or Mixed (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	No. 5 CW	Grade, if No. 5 specs not met
Degree of soundness	Cool and sweet, uniform size	Cool and sweet	Cool and sweet	Cool and sweet	May have a slight odour, not sour or musty	
Minimum test weight kg/hL (g/0.5 L)	68 (343)	66 (333)	64 (322)	62 (311)	58 (291)	*Corn, Sample CW (class) Account Light Weight*
Variety	Any variety of corn	Any variety of corn	Any variety of corn	Any variety of corn	Any variety of corn	
Other classes %	5	5	5	5	5	Over 5% - Use all other grading criteria and grade as *Corn (grade) Mixed*

Note: The colour is added to the grade name.

Corn, Canada Western Yellow, White or Mixed (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	No. 5 CW	Grade, if No. 5 specs not met
Heated %	0.1	0.2	0.5	1.0	3.0	*Corn, Sample CW (class) Account Heated*
Total % Damage	3	5	7	10	15	*Corn, Sample CW (class) Account Damaged*

Corn, Canada Western Yellow, White or Mixed (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	No. 4 CW	No. 5 CW	Grade, if No. 5 specs not met
Excreta %	0.02	0.02	0.02	0.02	0.02	Corn, Sample CW (class) Account Excreta
Total % Cracked corn and foreign material	2	3	5	7	12	50% or less - Corn Sample CW (class) Account CCFM Over 50% - sample Cracked Corn and Foreign Material
Stones %*	0.15	0.15	0.15	0.15	0.15	2.5% or less - *Corn, Rejected (grade) (class) Account Stones* Over 2.5% - *Corn, Sample Salvage*

* Stones are not included in Total cracked corn and foreign material

Corn, Canada Eastern Yellow, White or Mixed (CE), standard of quality

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	No. 5 CE	Grade, if No. 5 specs not met
Degree of soundness	Cool and sweet, uniform size	Cool and sweet	Cool and sweet	Cool and sweet	May have a slight odour, not sour or musty	
Minimum test weight kg/hL (g/0.5 L)	68 (343)	66 (333)	64 (322)	62 (311)	58 (291)	*Corn, Sample CE (class) Account Light Weight*
Variety	Any variety of corn	Any variety of corn	Any variety of corn	Any variety of corn	Any variety of corn	
Other classes %	5	5	5	5	5	Over 5% - Use all other grading criteria and grade as *Corn (grade) Mixed*

Note: The colour is added to the grade name.

Corn, Canada Eastern Yellow, White or Mixed (CE), damage

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	No. 5 CE	Grade, if No. 5 specs not met
Heated %	0.1	0.2	0.5	1.0	3.0	*Corn, Sample CE (class) Account Heated*
Total % Damage	3	5	7	10	15	*Corn, Sample CE (class) Account Damaged*

Corn, Canada Eastern Yellow, White or Mixed (CE), foreign material

Grading factor	No. 1 CE	No. 2 CE	No. 3 CE	No. 4 CE	No. 5 CE	Grade, if No. 5 specs not met
Excreta %	0.02	0.02	0.02	0.02	0.02	Corn, Sample CE (class) Account Excreta
Total % Cracked corn and foreign material %	2	3	5	7	12	50% or less - Corn Sample CE (class) Account CCFM Over 50% - sample Cracked Corn and Foreign Material
Stones %*	0.15	0.15	0.15	0.15	0.15	2.5% or less - *Corn, Sample CE (class) Account Stones* Over 2.5% - *Corn, Sample Salvage*

* Stones are not included in Total cracked corn and foreign material.

Export shipments

Grading

Corn on export is graded in accordance with primary grade standards and specifications.

Cracked corn and foreign material (CCFM)

Because breakage occurs during handling at terminal elevators, round down percentages by weight of CCFM to the nearest whole number on all officially sampled and inspected domestic or export shipments from a terminal elevator.

For example, a sample containing 4.7% CCFM by weight is recorded as containing 4% CCFM for grading purposes only on officially sampled and inspected shipments from a terminal elevator.

18. Lentils

Classes, types and varieties 18-3
Classes 18-3
Types 18-3
Varieties 18-3

Determination of dockage 18-4
Definitions 18-4
Determination of cleaning procedures (Lentils, other than Red only) 18-4
Dockage not reported 18-5
Normal cleaning procedures 18-5
Composition of dockage 18-6
Commercially clean (CCLN) 18-6
Cleaning for grade improvement 18-7

Determination of size (sizing) 18-8
Optional analysis 18-9

Grading 18-10
Important definitions 18-10
Net weight of sample 18-10
Hazardous substances in samples 18-10
Processed sample 18-10
Rounding rules 18-10
Non-registered varieties 18-10
Standards 18-10
Representative portions for grading 18-11

Grading factors 18-12
Adhered Soil (ADHS) 18-12
Ascochyta 📷 18-12
Bleached (BLCH) 18-12
Broken 18-12
Colour (CLR) 18-12
Contaminated grain 18-13
Contrasting classes (CON CL) 18-14
Contrasting colours (CON CLR) 18-14
Copper (COP) 18-14
Damage (DMG) 18-14
Earth pellets (EP) 18-15
Ergot (ERG) 18-15
Excreta (EXCR) 18-15
Extraneous material 18-15
Fertilizer pellets (FERT PLTS) 18-15
Fireburnt (FBNT) 18-15
Foreign material (FM) 18-16
Frost damage (FR) 📷 18-16
Heated (HTD) 18-16
Insect parts (I PARTS) 18-16
Odour (ODOR) 18-17
Other damage (ODMG) 18-17
Peeled, split and broken (PLDSPLTBKN) 18-17

Rime (RIME) 18-17
Sclerotinia sclerotiorum (SCL) 18-17
Split 18-18
Sprouted (SPTD) 18-18
Stained (STND) 18-18
Stones (STNS) 18-18
Treated seed and other chemical substances 18-20
Variety (VAR) 18-20
Wrinkled (WRKL) 18-20

Primary and export grade determination tables 18-21
Lentils, Canada, other than Red (CAN), standard of quality 18-21
Lentils, Canada, other than Red (CAN), damage 18-21
Lentils, Canada, other than Red (CAN), foreign material 18-21
Lentils, Canada, Red (CAN), standard of quality 18-22
Lentils, Canada, Red (CAN), damage 18-22
Lentils, Canada, Red (CAN), foreign material 18-22

Export shipments 18-23
Commercially clean (CCLN) 18-23
Not commercially clean (NCC) 18-23
Grading 18-23

Classes, types and varieties

Classes

Lentils are designated into two classes: Lentils, Red and Lentils, other than Red. The method of determining the class of a lentil is by cotyledon colour. Inspectors may need to visually inspect cotyledons to determine the class.

Types

Lentils may be categorized by type. A type may have a specific seed coat colour such as black or tan, or a specific characteristic, such as speckled green. The cotyledon color may be red, yellow or green.

Varieties

Lentil varieties may have a wide range of seed coat colours from green, red, speckled green, black and tan. The cotyledon color may be red, yellow or green.
There are a number of combinations of seed coat colours and cotyledon colours. This includes a red lentil variety with a green seed coat.

Determination of dockage

Definitions

Dockage is not assessed on lentil samples that meet the commercially clean specifications set out in the Lentil Export Shipments section. All samples must be analyzed to determine if they meet commercial cleanliness standards prior to dockage being assessed. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.2% of foreign material then dockage will be assessed using the procedures defined under *Determination of Dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed.

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in three stages.

1. Follow *Determination of cleaning procedures* using the No.14 round-hole hand sieve.
2. Follow *Normal cleaning procedures*, using the Carter dockage tester.
3. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Determination of cleaning procedures (Lentils, other than Red only)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Note: The determination of cleaning procedures is only performed on samples of Lentils, other than Red. For samples of red lentils, proceed directly to *Normal cleaning procedures.*

1. Using a Boerner-type divider, divide from the uncleaned sample, a representative portion of approximately 250 g.
2. Sieve the representative portion over the No.14 round-hole hand sieve.

   When using hand sieves, move the sieve from left to right 20 times, using a sifting motion. One time is one complete motion from the centre to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Determine the portion remaining on top of the No.14 round-hole sieve.

   Note: When results may be affected by excessive dockage material, reduce the material through sieving or handpicking without removing whole lentils.

If . . .	The sample will be cleaned as . . .
10% or more remains on top of the No. 14 round-hole sieve	*Large*
Less than 10% remains on top of the No. 14 round-hole sieve	*Small*

Dockage not reported

▲ **Important:** Dockage is not reported for

- Lentils, Sample Canada Account Fireburnt
- Lentils, Sample Salvage
- Lentils, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

1. Set up the Carter dockage tester as follows:

   Note: Select the riddle that will achieve the maximum removal of large dockage material with the minimum removal or lodging of lentils.

Lentils, Other than Red

Setting	Small	Large
Feed control	# 5	# 6
Air control	# 7	# 7
Riddle	No.1 or No.25	No.25 or No.6
Top sieve	No. 9 round-hole	No. 12 round-hole
Centre sieve	blank tray	blank tray
Bottom sieve	none	none
Sieve cleaner control	Off	Off

Lentils, Red

Feed control	# 5
Air control	# 7
Riddle	No.1 or No.25
Top sieve	No. 9 round-hole
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the dockage tester after sample passes through.
6. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
7. Remove the aspiration pan.
8. Determine dockage using the list under *Composition of dockage*.

Composition of dockage

- Material other than whole lentils that remain on top of the riddle—whole sound lentils are returned to the sample
- Material which passes through the selected round-hole sieve
- Material removed by aspiration
- All grasshoppers, other insects and insect parts handpicked from the sieved sample
- Material removed by special cleaning for grade improvement procedures if the grade can be improved

Commercially clean (CCLN)

Samples exiting primary elevators are considered commercially clean when they contain 0.2% or less by weight of dockage material. No dockage is reported.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning to remove foreign material, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed, including on export.

1. After the cleaning assessment has been completed, sieve the sample by hand using the appropriate hand sieve.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a steady motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.

2. Weigh the additional dockage and add it to the original dockage.

Size of lentil	Equipment	Effect on composition of dockage
Small	No. 9x9 wire hand sieve No. 10 round-hole hand sieve	Material removed by the sieve is added to dockage. Not more than 5% of whole sound lentils may be removed for each single grade improvement.
Large	No. 9x9 wire hand sieve	Material removed by the sieve is added to dockage. Not more than 5% of whole sound lentils may be removed for each single grade improvement.

Determination of size (sizing)

On written request, if size is determined to be large or small, then size becomes part of the grade name. If a sample does not meet the definition for large or small, it is graded without reference to size.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#6
Air control	Off
Riddle	None
Top sieve	No. 15 round-hole
Centre sieve	No. 12 round-hole
Bottom sieve	Blank tray
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the cleaned sample to obtain a representative portion of 250 g.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn off the dockage tester.
6. Weigh separately. The percentage by weight determines the size of the lentils in the sample.

If . . .	**Then the size is . . .**
97% or more of the sample remains on top of a No. 15 round-hole sieve	*Large, for example, Lentils, No. 1 Canada Large*
80% or more passes through the No. 12 round-hole sieve	*Small, for example, Lentils, No. 1 Canada Small*
otherwise	no size indicated *Lentils, No. 1 Canada*

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of lentils.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

     Example
     95.0% Lentils, No. 1 Canada
     4.0% Domestic Mustard Seed, No. 1 Canada Oriental
     1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List.

Representative portions for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of lentils for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Ascochyta	25 g	100 g
Contrasting colours	50 g	100 g
Copper	25 g	50 g
Damage	25 g	100 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	50 g	250 g
Heated	50 g	100 g
Insect parts	working sample	working sample
Odour	working sample	working sample
Peeled, split and broken	25 g	100 g
Sclerotinia sclerotiorum	250 g	working sample
Stained	25 g	100 g
Stones	working sample	working sample
Total bleached including copper	25 g	50 g
Treated seed	working sample	working sample
Wrinkled	25 g	50 g

Grading factors

Images available on web version

Adhered Soil (ADHS)

See *Colour*.

Ascochyta

Ascochyta is a fungal disease that attacks the lentil plant and seed. Any degree of white fungal growth on the seed is considered damaged. See *Stained* and *Damage*

Bleached (BLCH)

Bleached seeds have a whitened seed coat that is distinctly faded from the natural red colour of sound lentils. The discoloration must affect the entire seed coat. Lentils having a lighter pink shade that are contrasting with the overall sample are considered sound.

The red lentil colour guide may be used to assist in the determination of bleached seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Broken

See *Peeled, split and broken*.

Colour (CLR)

Lentils, other than Red

Colour is evaluated after the removal of stained and damaged lentils, using approved lentil standards.

Description used in grade determination table	Characteristics
Good natural colour	Lentils that are sound, well matured and have a good natural colour.
Reasonably good natural colour	Lentils with light amounts of adhered soil or lightly discoloured from storage or other natural causes.
Fair colour	Lentils with moderate amounts of adhered soil, or otherwise moderately discoloured from natural causes.
Poor colour	Lentils that do not meet the definition of fair colour, but are without severely adhered soil or are severely discoloured (dark brown).

The term sunburned or oxidation is used to describe the normal discolouration of the seed coat which occurs during storage. The colour may vary from light tan to brown or very dark brown, depending on the duration and conditions of storage.

Lentils, Red

Colour is evaluated by using the following guidelines.

Description used in grade determination table	Characteristics		
	Copper %	Total bleached including copper %	Adhered Soil
Good natural colour	1	3	Light amounts of adhered soil
Reasonably good natural colour	3	10	Moderate amounts of adhered soil
Fair colour	10	25	Heavy amounts of adhered soil
Poor colour	Lentils that do not meet the definition of fair colour.		

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Lentils, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Lentils, Sample Condemned*.

Contrasting classes (CON CL)

Lentils are designated into two classes, Lentils, Red and Lentils, other than Red. The method of determining the class of lentils is by cotyledon colour. Inspectors may need to visually inspect cotyledons to determine the class.

Contrasting classes are assessed in Lentils, Red only. For Lentils, other than Red, see *Contrasting colours.*

Contrasting colours (CON CLR)

Contrasting colours refers to a difference in cotyledon colour and/or significantly different seed coat colour. Examples include:

- Cotyledons: red cotyledons contrast with yellow cotyledons
- Seed coats: dark-green speckled lentils contrast with green lentils

Copper (COP)

Copper seeds have a rust color covering both sides of seed and the entire seed coat. The rust colour is in distinct contrast with the natural red colour of sound lentils.

The red lentil colour guide may be used to assist in the determination of copper seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request this guide.

Damage (DMG)

Damaged lentils may be peeled, split, broken, sprouted, distinctly green, frost damaged, ascochyta damaged, distinctly deteriorated or discoloured by weather or disease, insect damaged, heat damaged or otherwise damaged in a way which materially affects quality.

▲ **Important:** Kernels that are deformed are considered sound unless there is another reason for the damage beyond the deformity.

Note: For green cotyledon varieties, do not assess distinctly green cotyledons as damage. For example, Queen Green variety

Procedures

1. Handpick suspect damaged lentils.
2. Lentils showing some indication of possible internal damage are to be cut for confirmation of damage.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Foreign material*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Lentils, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Lentils, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt seeds are seeds charred or scorched by fire. A cross-section of a fireburnt seed resembles charcoal with numerous air holes. The air holes result in a low weight seed which crumbles easily under pressure.

Procedures

Samples of lentil containing any fireburnt seeds are graded *Lentil, Sample Canada Account Fireburnt.*

Foreign material (FM)

Foreign material includes anything that is not a lentil or part of a lentil.

Frost damage (FR)

Frost damage is normally indicated by a combination of wrinkling and close adherence of the seed coat to the cotyledon. The seed coat may be translucent in appearance, and the cotyledons are brittle in texture. Frost damage is included in the tolerance for *Other Damage.*

Procedures

1. Handpick all frost-damaged lentils.
2. Cut suspect frost-damaged lentils. Frost-damaged seeds are brittle when cut.

Heated (HTD)

Heated lentils are usually dark tan to black in appearance.

If sample contains . . .	Then the grading factor is . . .
Lentils with tan-coloured cotyledons and a distinct heated odour	*Heated*
Lentils with tan-coloured cotyledons and no odour	*Damage*

Procedures

1. Handpick suspect heated lentils.
2. Cut suspect seeds to expose the cotyledons. Heated lentils have tan-coloured cotyledons.
3. Heated seeds of other grains are included in the tolerance for *Heated.*

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.

If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain* Sample Account Odour.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Lentils, Sample Canada Account Odour*
An excessive heated odour	*Lentils, Sample Canada Account Heated*
An excessive fireburnt odour	*Lentils, Sample Canada Account Fireburnt*

Other damage (ODMG)

Other damage is any damage other than heated, or peeled, split and broken.
See *Damage*.

Peeled, split and broken (PLDSPLTBKN)

Peeled, split and broken includes lentils which are otherwise sound but which are less than three-quarters of whole seeds or where less than one-half of the seed coat is intact.

Lentils with cracked or clipped seed coats are considered sound when the cotyledons are firmly held together.

Rime (RIME)

Rime is the adhered lining of the seed pod. It is included in the general tolerance for Damage.

If the rime . . .	Then the grading is . . .
Completely and densely covers the lentils	*Damaged*
Is sparse enough to expose the soundness of the lentil	*Sound*—the rime is considered in the general appearance of the sample

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Split

See *Peeled, split and broken*.

Sprouted (SPTD)

Lentils are considered sprouted when the seed coat splits and the primary sprout emerges from between the cotyledons or the primary sprout has been broken off but there is clear evidence of sprouting. Sprouted is considered in the tolerance for *Other Damage.*

Stained (STND)

Stained lentils includes (only applies to Lentils, other than Red)

- Mottled seeds—seeds with a significant number of distinct spots on the seed coat
- Water spot—seeds with distinct brown discolourations on the seed coat
- Ascochyta—seeds with dark-coloured lesions on the seed coat. Seeds with white fungal growth are also considered as damaged. See *Ascochyta.*
- Blue-black—seeds of green lentils with significant blue-black discolouration of the seed coat. Seeds of varieties of lentils with dark-green speckled or coloured seed coats are considered as *Contrasting colours.*

Procedures

Refer to digitally produced colour prints of stained lentils as a grading guide

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Lentils, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Lentils, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones is graded *Lentils, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Lentils, Canada Red

Grade name	Stones %
No. 1 Canada Red	0.1
No. 2 Canada Red	0.2
Extra No. 3 Canada Red	0.2
No. 3 Canada Red	0.2

Basic grade:..... *Lentils, No. 1 Canada Red*

If the above sample contained	Grade in western Canada
0.2% stones	*Lentils, Rejected No. 1 Canada Red Account Stones*
1.0% stones	*Lentils, Rejected No. 1 Canada Red Account Stones*
3.0% stones	*Lentils, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Lentils, Canada Red

Grade name	Stones %
No. 1 Canada Red	0.1
No. 2 Canada Red	0.2
Extra No. 3 Canada Red	0.2
No. 3 Canada Red	0.2

Basic grade:..... *Lentils, No. 1 Canada Red*

If the above sample contained	Grade in eastern Canada
0.2% stones	*Lentils, No. 2 Canada Red*
1.0% stones	*Lentils, Sample Canada Red Account Stones*
3.0% stones	*Lentils, Sample Salvage*

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Lentil varieties may have a wide range of seed coat colours, including green, red, speckled green, black and tan. The cotyledon colour may be red, yellow or green. Lentils are designated into two classes: Lentils, Red and Lentils, other than Red. The method of determining the class of a lentil is determined by the cotyledon colour.
There are a number of combinations of seed coat colours and cotyledon colours. This includes a red lentil variety with a green seed coat.

Procedures

If you are unsure of the cotyledon colour or suspect it is different than anticipated, remove the seed coat from a small portion of the sample to determine the cotyledon colour. Use a barley pearler to assist in removing the seed coat and determine the cotyledon colour

Note: On written request, the lentil variety forms part of the grade name, for example, No. 1 Canada, Laird.

▲ **Important**: State “Varietal purity not guaranteed” in the remarks section of grading certificates issued using a varietal name.

Wrinkled (WRKL)

Wrinkled seeds are characterized by a seed surface that has sharp ridges and pronounced depressions that could also be described as seed coat folds and indents. Wrinkles may be evident only on one side of the lentil.
Lentils that only have dimpled seed coat or folds restricted only to the outside ring of the seed are considered sound.

Note: Wrinkled only applies to red lentils

Reference the Red lentil wrinkled guide on the web version to assist in the determination of wrinkled seeds. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request a copy of this guide.

Primary and export grade determination tables

Lentils, Canada, other than Red (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Uniform size, good natural colour	Uniform size, reasonably good natural colour	Uniform size, fair colour	Poor colour	
Variety	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils	
Contrasting colours %	0.2	0.5	2.0	3.0	*Lentils, Sample Canada Account Contrasting Colours*
Stained %	1	4	7	No limit	

Note: Upon written request, the variety name will be added to the grade name and the statement "Varietal purity not guaranteed" shown in the remarks section of any certificate issued.

Lentils, Canada, other than Red (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated %	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Account Heated*
Peeled, split and broken %	2.0	3.5	5.0	10.0	*Lentils, Sample Canada Account Damaged*
Other damage %	1.0	2.0	5.0	10.0	*Lentils, Sample Canada Account Damaged*
Total % Damage	2.0	3.5	5.0	10.0	*Lentils, Sample Canada Account Damaged*

Lentils, Canada, other than Red (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	0.05	*Lentils, Sample Canada Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Lentils, Sample Canada Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	*Lentils, Sample Canada Account Admixture*
Sclerotinia %	0.05	0.05	0.05	0.05	*Lentils, Sample Canada Account Admixture*
Stones %	0.1	0.2	0.2	0.2	2.5% or less - **West** - *Lentils, Rejected (grade) Account Stones,* or **East** - *Lentils, Sample Canada Account Stones* Over 2.5% - *Lentils, Sample Salvage*
Other foreign material %	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Account Admixture*
Total % Foreign material	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Account Admixture*

Lentils, Canada, Red (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Uniform size, good natural colour	Uniform size, reasonably good natural colour	Uniform size, fair colour	Poor colour	
Variety	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils registered under the *Seeds Act*	Any variety of lentils	
Contrasting classes %	0.2	0.5	2.0	3.0	*Lentils, Sample Canada Red Account Contrasting Colours*
Copper %	1	3	10	No limit	
Total % Bleached including copper	3	10	25	No limit	

Note: Upon written request, the variety name will be added to the grade name and the statement "Varietal purity not guaranteed" shown in the remarks section of any certificate issued.

Lentils, Canada, Red (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated %	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Red Account Heated*
Peeled, split and broken %	2.0	3.5	5.0	10.0	*Lentils, Sample Canada Red Account Damaged*
Other damage %	1.0	2.0	5.0	10.0	*Lentils, Sample Canada Red Account Damaged*
Total % Damage	2.0	3.5	5.0	10.0	*Lentils, Sample Canada Red Account Damaged*
Wrinkled %	2.0	5.0	N/A	N/A	
Total % Damage including wrinkled	4.0	8.0	N/A	N/A	

Lentils, Canada, Red (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	Extra No. 3 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	0.05	*Lentils, Sample Canada Red Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	*Lentils, Sample Canada Red Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	*Lentils, Sample Canada Red Account Admixture*
Sclerotinia %	0.05	0.05	0.05	0.05	*Lentils, Sample Canada Red Account Admixture*
Stones %	0.1	0.2	0.2	0.2	2.5% or less - **West** - *Lentils, Rejected (grade) Account Stones,* or **East** - *Lentils, Sample Canada Red Account Stones* Over 2.5% - *Lentils, Sample Salvage*
Other foreign material %	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Red Account Admixture*
Total % Foreign material	0.2	0.5	0.5	1.0	*Lentils, Sample Canada Red Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are considered commercially clean when they contain 0.2% or less by weight of dockage material. No dockage is reported.

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Lentils on export are graded in accordance with the primary and export grade determination tables.

19. Beans

Classes, types and varieties 19-3
Classes 19-3

Determination of dockage 19-4
Definitions 19-4
Dockage not reported 19-4
Normal cleaning procedures 19-4
Composition of dockage 19-5
Commercially clean (CCLN) 19-5
Optional analysis 19-5

Grading 19-6
Important definitions 19-6
Net weight of sample 19-6
Hazardous substances in samples 19-6
Rounding rules 19-6
Processed sample 19-6
Non-registered varieties 19-6
Standards 19-6
Representative portion for grading 19-7

Grading factors 19-8
Adhered soil (ADHS) 19-8
Broken (BKN) 19-8
Classes 19-8
Colour (CLR) 19-8
Contaminated grain 19-9
Contrasting classes (CON CL) 19-9
Damage (DMG) 19-10
Earth pellets (EP) 19-10
Ergot (ERG) 19-10
Excreta (EXCR) 19-10
Extraneous material 19-10
Fertilizer pellets (FERT PLTS) 19-11
Fireburnt (FBNT) 19-11
Foreign material (FM) 19-11
Heated (HTD) 19-11
Insect parts (I PARTS) 19-12
Magnesium spot 19-12
Mouldy (MLDY) 19-12
Mudball beans 19-12
Odour (ODOR) 19-12
Other classes of beans that blend (OCLBB) 19-13
Rotted (ROT) 19-13
Sclerotinia sclerotiorum (SCL) 19-13
Soft earth pellets (SEP) 19-13
Splits (SPLTS) 19-13
Stones (STNS) 19-14
Treated seed and other chemical substances 19-16
Variety (VAR) 19-16

Special analyses 19-17
Split beans 19-17
Cracked seed coats (CSDC) 19-17

Primary and export grade determination tables 19-18
Pea Beans, Canada (CAN), standard of quality 19-18
Pea Beans, Canada (CAN), foreign material/damage 19-18
Beans, Canada, Cranberry, Blackeye or Yelloweye (CAN), standard of quality ... 19-19
Beans, Canada, Cranberry, Blackeye or Yellow (CAN), foreign material/damage ... 19-19
Beans, Canada, other than Cranberry, Blackeye, Yelloweye or Pea Beans (CAN), standard of quality 19-20
Beans, Canada, other than Cranberry, Blackeye, Yellow or Pea Beans (CAN), foreign material/damage 19-20

Export shipments 19-21
Commercially clean (CCLN) 19-21
Not commercially clean (NCC) 19-21
Grading 19-21

Classes, types and varieties

Classes

There are numerous classes of beans; for example, cranberry beans, blackeye beans, black turtle beans. The class of beans forms part of the grade name; for example, Beans, No. 1 Canada Cranberry.

The method of determining the class of a bean is by the size, shape and colour of the bean.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Beans, Sample Canada (class) Account Fireburnt
- Beans, Sample Salvage
- Beans, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.

   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

2. Choose the appropriate hand sieve for the size of the bean.

   No. 8 slotted
   No. 9 slotted
   No. 11 slotted

3. Sieve the samples over the appropriate slotted sieve, using approximately 250 g at a time, to remove all readily removable material.

4. Handpick all coarse vegetable matter such as pods, stems, straw, thistle tops from the sieved sample.

   ▲ **Important:** Do not remove mineral matter, ergot, sclerotinia, weed seeds or other grains.

5. Handpick all grasshoppers, other insects and insect parts from the sieved sample.

6. Handpick mudballs from the cleaned sample

Composition of dockage

- All material, including splits, removed by sieving, handpicking or both, as defined in *Normal cleaning procedures*
- Mudball beans handpicked from the cleaned sample

Commercially clean (CCLN)

Samples exiting primary elevators are considered commercially clean when they contain no dockage material.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of beans.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Beans No. 1 Canada Cranberry
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of beans for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Contrasting classes	250 g	working sample
Damage	100 g	500 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	250 g	working sample
Heated, rotted, mouldy	250 g	working sample
Insect parts	working sample	working sample
Odour	working sample	working sample
Other classes of beans that blend	100 g	250 g
Sclerotinia sclerotiorum	500 g	working sample
Splits	100 g	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Adhered soil (ADHS)

Adhered soil is soil which clings to beans.

Procedures

- Completely covered beans are called mudball beans. See *Mudball beans*.
- Otherwise, assess the amount of adhered soil against the standard.

Broken (BKN)

See *Splits*

Classes

There are numerous classes of beans; for example, cranberry beans, blackeye beans, turtle beans. The class of beans forms part of the grade name; for example, *Beans, No. 1 Canada Cranberry*.

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of splits and damaged beans. There is no numeric tolerance for colour. It is included in the evaluation of the standard of quality of the sample.

Standard of quality	Description (for grading)
Good natural colour	Beans may be slightly dull, slightly immature or have very lightly adhered soil.
Reasonably good colour	Beans are moderately immature, with lightly adhered soil, or are lightly stained, or are lightly discoloured from storage.
Fairly good colour	Beans have moderately adhered soil or are stained, or moderately discoloured from storage.
Off colour	Beans cannot be considered of fairly good colour.

Sunburned or oxidized

In assessing colour which does not meet grade standards, you may also use the term *Sunburned or oxidized*, which is a normal discolouration of the seed coat occurring during storage. The colour may vary from light tan to brown or very dark brown, depending on the duration and conditions of storage.

Procedures

Colour is assessed against the standard for the grade.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Beans, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Beans, Sample Condemned.*

Contrasting classes (CON CL)

Beans of another class that contrast in colour, size or shape to the predominant beans in a sample are considered to be of a contrasting class.

Damage (DMG)

Damaged beans include

- Whole, split, or broken beans that are sprouted, very immature, perforated, distinctly deteriorated or discoloured by weather or disease.
- Beans that are otherwise damaged in a way that seriously affects appearance or quality. This includes mudball beans in commercially clean and processed samples.

Procedures

Beans showing some indication of possible internal damage are to be cut for confirmation of damage.

▲ **Important:** Damage is the most detrimental grading factor.
Refer to the Order of Precedence. See *Glossary*

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Beans, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Beans, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt beans are beans charred or scorched by fire. A cross-section of a fireburnt bean resembles charcoal with numerous air holes. The air holes result in a low weight bean which crumbles easily under pressure.

Procedures

Samples of beans containing any fireburnt seeds are graded *Beans, Sample Canada (class) Account Fireburnt.*

Foreign material (FM)

This includes any material other than beans or split beans not removed in cleaning.

Heated (HTD)

Heated, rotted, and mouldy are included in the same tolerance.

Pea beans

Heating is indicated by a dull seed coat varying from cream to mahogany in colour. The colour is more intense in the hilum area. When viewed in cross-section, the cotyledons vary in colour from tan to dark brown. Very light tan cotyledons are considered damaged rather than heated.

Red kidney beans

Heating is indicated by a dull seed coat, dark red to black in colour.

Procedures

- To determine the degree of damage, split the bean. Do not cut it crosswise.
- Heated seeds of other grains are included in the tolerance for *Heated*.

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.

If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain* Sample Account Odour.

Magnesium spot

Magnesium spot is a black spot penetrating the cotyledon, most commonly found in cranberry beans. Affected beans are considered damaged.

Procedures

Initially separate all beans where there is a "suspicion" of internal damage. This "suspicion" will be based on external characteristics or discolouration on the surface of the beans which indicates that the cotyledons may be damaged. Only suspect beans are to be cut and assessed for damage.

Mouldy (MLDY)

Mouldy beans are characterized by the presence of dark blue exterior moulds that develop in machine-damaged crevices. Light and dark red kidney beans may develop yellow to black interior moulds in the concave centre area. Heated, rotted, and mouldy are included in the same tolerance.

Mudball beans

Mudball beans are beans that are completely covered with caked-on mud.

- In processed or commercially clean samples, mudball beans are considered *Damage*.
- In not commercially clean samples, mudball beans are considered dockage.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An objectionable odour, not heated or fireburnt	*Beans, Sample Canada Account Odour*
A heated odour	*Beans, Sample Canada Account Heated*
A fireburnt odour	*Beans, Sample Canada Account Fireburnt*

Other classes of beans that blend (OCLBB)

Classes of beans that blend are sound beans of other classes which are similar in colour, size and shape to the predominant beans in a sample.

Rotted (ROT)

Rotted beans are whole beans or pieces of beans that are visibly in advanced stages of decomposition and that feel spongy under pressure. Heated, rotted, and mouldy are included in the same tolerance.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered *Stones*. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Earth pellets are classed as foreign material.

Splits (SPLTS)

Splits include split beans, broken pieces of beans that are less than three-quarters of whole kernels, and halves of beans that are loosely held together by cracked seed coats.

▲ **Important:** Splits do not include beans that are otherwise damaged. In other words, if a split is damaged, it is graded as *Damage*, not as splits.

Procedures

Use a slotted sieve to help separate splits. Return to the sample any whole beans which pass through the sieve.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Beans, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Beans, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Beans, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Beans, Canada Cranberry, Blackeye or Yelloweye Canada

Grade name	Stones %
Extra No. 1 Canada	0.00
No. 1 Canada	0.05
No. 1 Canada Select	0.05
No. 2 Canada	0.10
No. 3 Canada	0.20
No. 4 Canada	0.50

Basic grade:..... *Beans, No. 2 Canada Cranberry*
Reason for basic grade:..... 0.2% Heated

If the above sample contained	Grade in western Canada
0.2% stones	*Beans, Rejected No. 2 Canada Cranberry Account Stones*
1.0% stones	*Beans, Rejected No. 2 Canada Cranberry Account Stones*
3.0% stones	*Beans, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Beans, Canada Cranberry, Blackeye or Yelloweye Canada

Grade name	Stones %
Extra No. 1 Canada	0.00
No. 1 Canada	0.05
No. 1 Canada Select	0.05
No. 2 Canada	0.10
No. 3 Canada	0.20
No. 4 Canada	0.50

Basic grade:..... *Beans, No. 2 Canada Cranberry*
Reason for basic grade:..... 0.2% Heated

If the above sample contained	Grade in eastern Canada
0.2% stones	*Beans, No. 3 Canada Cranberry*
1.0% stones	*Beans, Sample Canada Cranberry Account Stones*
3.0% stones	*Beans, Sample Salvage*

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Beans are graded without reference to variety

Special analyses

Upon request, samples may be analyzed for other factors. The shipper of the beans indicates which factors are to be analyzed and which sieves to use.

Split beans

Use a slotted sieve to help in separating splits from whole beans.

Record all percentages to one decimal place.

Factor	Minimum representative portion to analyse g
Foreign material	500
Sound whole or sound splits	100
Damaged whole or damaged splits	100

Cracked seed coats (CSDC)

Cracked seed coats include

- Beans with any cracked seed coats
- Beans with a piece of seed coat missing
- Beans with a seed coat punctured by insect or other means

Primary and export grade determination tables

Pea Beans, Canada (CAN), standard of quality

Grading factor	Extra No. 1 Canada	No. 1 Canada	Canada No. 1 Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Colour	Uniform size, good natural colour	Reasonably good colour	Fairly good colour	Fairly good colour	Fairly good colour	Off-colour	
Variety	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans	
Other classes that blend %	1	1	1	5	5	5	*Pea Beans, Sample Canada Account Other Classes That Blend*

Pea Beans, Canada (CAN), foreign material/damage

Grading factor	Extra No. 1 Canada	No. 1 Canada	Canada No. 1 Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Ergot %	0.05	0.05	0.05	0.05	0.05	0.05	*Pea Beans, Sample Canada Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	0.01	0.01	*Pea Beans, Sample Canada Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	0.02	0.02	*Pea Beans, Sample Canada Account Admixture*
Sclerotinia %	0.05	0.05	0.05	0.05	0.05	0.05	*Pea Beans, Sample Canada Account Admixture*
Stones, shale or similar material %	0.01	0.05	0.01	0.10	0.20	0.20	2.5% or less - **West** - *Pea Beans, Rejected (grade) Account Stones*, or **East** - *Pea Beans, Sample Canada Account Stones* Over 2.5% - *Pea Beans, Sample Salvage*
Total % Foreign material	0.05	0.10	0.05	0.20	0.50	0.50	*Pea Beans, Sample Canada Account Admixture*
Contrasting classes %	0.1	0.1	0.1	1.0	1.0	1.0	*Pea Beans, Sample Canada Account Contrasting Classes*
Heated, rotted, mouldy %	0.0	0.1	0.2	0.2	0.3	1.0	*Pea Beans, Sample Canada Account Heated* or *Account Mouldy Kernels*
Total % Damage, foreign material and contrasting classes	1.0	1.5	1.5	3.0	5.0	8.5	*Pea Beans, Sample Canada Account (reason)*
Total % Damage, including splits, foreign material and contrasting classes	1.0	2.0	2.0	4.0	6.0	10.0	*Pea Beans, Sample Canada, Account (reason)*

Beans, Canada, Cranberry, Blackeye or Yelloweye (CAN), standard of quality

Grading factor	Extra No. 1 Canada	No. 1 Canada	No. 1 Canada Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Colour	Uniform size, good natural colour	Reasonably good colour	Fairly good colour	Fairly good colour	Fairly good colour	Off-colour	
Variety	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans	
Other classes that blend %	1	3	3	5	10	15	*Beans, Sample Canada (class) Account Other Classes That Blend*

Note: The class name is added to the grade name.

Beans, Canada, Cranberry, Blackeye or Yellow (CAN), foreign material/damage

Grading factor	Extra No. 1 Canada	No. 1 Canada	No. 1 Canada Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Ergot %	0.05	0.05	0.05	0.05	0.05	0.05	*Beans, Sample Canada (class) Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	0.01	0.01	*Beans, Sample Canada (class) Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	0.02	0.02	*Beans, Sample Canada (class) Account Admixture*
Sclerotinia %	0.05	0.05	0.05	0.05	0.05	0.05	*Beans, Sample Canada (class) Account Admixture*
Stones, shale or similar material %	0.00	0.05	0.05	0.10	0.20	0.50	2.5% or less - West - *Beans, Rejected (grade) (class) Account Stones*, or **East** - *Beans, Sample Canada (class) Account Stones* Over 2.5% - *Beans, Sample Salvage*
Total % Foreign material	0.05	0.10	0.10	0.20	0.50	1.00	*Beans, Sample Canada Account Admixture*
Contrasting classes %	1.0	1.5	1.5	3.0	5.0	8.5	*Beans, Sample Canada (class) Account Contrasting Classes*
Heated, rotted, mouldy %	0.0	0.1	0.1	0.2	0.3	1.0	*Beans, Sample Canada (class) Account Heated* or *Account Mouldy Kernels*
Total % Damage, foreign material and contrasting classes	1.0	1.5	1.5	3.0	5.0	8.5	*Beans, Sample Canada (class) Account (reason)*
Total % Damage, including splits, foreign material and contrasting classes	1.0	3.5	3.5	5.5	7.5	10.0	*Beans, Sample Canada (class) Account (reason)*

Beans, Canada, other than Cranberry, Blackeye, Yelloweye or Pea Beans (CAN), standard of quality

Grading factor	Extra No. 1 Canada	No. 1 Canada	No. 1 Canada Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Colour	Uniform size, good natural colour	Reasonably good colour	Fairly good colour	Fairly good colour	Fairly good colour	Off-colour	
Variety	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans registered under the *Seeds Act*	Any variety of beans	
Other classes that blend %	1	3	3	5	10	15	*Beans, Sample Canada (class) Account Other Classes That Blend*

Note: The class name is added to the grade name.

Beans, Canada, other than Cranberry, Blackeye, Yellow or Pea Beans (CAN), foreign material/damage

Grading factor	Extra No. 1 Canada	No. 1 Canada	No. 1 Canada Select	No. 2 Canada	No. 3 Canada	No. 4 Canada	Grade, if No. 4 specs not met
Ergot %	0.05	0.05	0.05	0.05	0.05	0.05	*Beans, Sample Canada (class) Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	0.01	0.01	*Beans, Sample Canada (class) Account Excreta*
Insect parts %	0.02	0.02	0.02	0.02	0.02	0.02	*Beans, Sample Canada (class) Account Admixture*
Sclerotinia %	0.05	0.05	0.05	0.05	0.05	0.05	*Beans, Sample Canada (class) Account Admixture*
Stones, shale or similar material %	0.00	0.05	0.05	0.10	0.20	0.50	2.5% or less - **West** - *Beans, Rejected (grade) (class) Account Stones*, or **East** - *Beans, Sample Canada (class) Account Stones* Over 2.5% - *Beans, Sample Salvage*
Total % Foreign material	0.05	0.10	0.10	0.20	0.50	1.00	*Beans, Sample Canada Account Admixture*
Contrasting classes %	1.0	1.5	1.5	3.0	5.0	8.5	*Beans, Sample Canada (class) Account Contrasting Classes*
Heated, rotted, mouldy %	0.0	0.1	0.1	0.2	0.3	1.0	*Beans, Sample Canada (class) Account Heated* or *Account Mouldy Kernels*
Total % Damage, foreign material and contrasting classes	1.0	1.5	1.5	3.0	5.0	8.5	*Beans, Sample Canada (class) Account (reason)*
Total % Damage, including splits, foreign material and contrasting classes	1.0	2.0	2.0	4.0	6.0	10.0	*Beans, Sample Canada (class) Account (reason)*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Export shipments are considered commercially clean when they contain no dockage material.

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.
A deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Beans on export are graded in accordance with primary and export grade determination tables.

20. Soybeans

Classes, types and varieties **20-3**

Determination of commercially clean **20-4**

Determination of dockage **20-6**
Dockage not reported 20-6
Normal cleaning procedures 20-6
Composition of dockage 20-7
Optional analysis 20-7

Grading **20-8**
Important definitions 20-8
Net weight of sample 20-8
Hazardous substances in samples 20-8
Rounding rules 20-8
Processed sample 20-8
Non-registered varieties 20-8
Standards 20-8
Representative portions for grading 20-9

Grading factors **20-10**
Colour (CLR) 20-10
Contaminated grain 20-10
Damage (DMG) 20-11
Downy mildew (DWNY MIL) 20-11
Earth pellets (EP) 20-11
Ergot (ERG) 20-12
Excreta (EXCR) 20-12
Extraneous material 20-12
Fertilizer pellets (FERT PLTS) 20-12
Fireburnt (FBNT) 20-12
Foreign material (FM) 20-12
Foreign material other than grain (FMXGRN) 20-13
Frost (FR) 20-13
Heated (HTD) 20-13
Hulls (HULLS) 20-13
Immature (IM) 📷 20-13
Insect Damage (I DMG) 20-14
Mottled kernels 20-14
Mouldy (MLDY) 20-14
Mudball soybean 20-14
Odour (ODOR) 20-14
Other colours (OCLR) 20-15
Other grains (OGS) 20-15
Pokeweed stain 20-15
Protein (PROT) 20-15
Purple mottling 20-15
Rancid 20-15
Sclerotinia sclerotiorum (SCL) 20-16
Seed coats (SDC) 20-16
Shrivelled (SHV) 📷 20-16

Soft earth pellets (SEP) 20-16
Splits (SPLTS) 20-16
Sprouted 20-16
Stained and mottled (STND) 20-17
Stones (STNS) 20-18
Test weight (TWT) 20-19
Treated seed and other chemical substances 20-19
Variety (VAR) 20-19

Special analyses 20-20
Hilum colour (white hilum) 20-20
Sizing 20-20

Primary and export grade determination tables 20-21
Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), standard of quality 20-21
Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), damage 20-21
Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), foreign material 20-21
Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), other factors . 20-21

Export shipments 20-22
Commercially clean (CCLN) 20-22
Not commercially clean (NCC) 20-22
Grading 20-22

Classes, types and varieties

Soybeans may be yellow, green, brown, black or mixed. Colour is part of the grade name; for example, Soybeans, No. 1 Canada Yellow.

The method for determining the colour of a soybean is by seed coat colour.

The interior of a soybean is generally yellow, but may be green.

Determination of commercially clean

Dockage is not assessed on soybean samples that meet the commercially clean specifications set out in the Soybean Export Shipments section. All samples must be analyzed to determine if they meet commercial cleanliness standards prior to dockage being assessed. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.2% of roughage material then dockage will be assessed using the procedures defined under *Determination of Dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed using the procedures, and applying the specifications, listed below.

1. Using a Boerner-type divider, divide the sample to obtain a representative portion.
    - Official samples shall be at least 1 kg.
    - Unofficial samples shall be at least 1 kg.
2. Place approximately 250 grams of the sample at a time on the No. 8 round hole sieve.
3. Move the sieves from left to right 30 times using a sifting motion. One complete motion is approximately 10 cm from the center to one side, back to the center, approximately 10 cm to the other side and back to the center.
4. Separate broken soybean from the other material passing through the No. 8 round hole sieve.

    Note: Soybean hulls are included in the material other than broken soybeans.
5. The material other than broken soybeans is weighed and the percentage calculated to determine if it meets the commercially clean specification for material other than broken soybeans through the No. 8 round hole sieve. (Column 1 of the commercially clean specification table)
6. Handpick the entire sample remaining on top of the No. 8 round hole sieve for any roughage material and hulls.
7. The roughage and hulls remaining on the No. 8 round hole sieve are weighed and the percentage calculated to determine if it meets the commercial clean specification for roughage and hulls. (Column 2 of the commercially clean specification table)
8. The percentage of roughage and hulls and the percentage of material other than broken soybeans passing through the No. 8 round hole sieve are added together to determine if the total meets the commercially clean specification. (Column 3 of the commercially clean specification table)
9. The broken soybeans passing through the No. 8 round hole sieve are weighed and the percentage calculated to determine if it meets the commercially clean specification. (Column 4 or column 5 of the commercially clean specification table.

Should the percentage concentration of any factors determined in steps 1 through 9 exceed the specifications set out in columns 1 through 5 of the commercially clean specification table the sample will be considered to be not commercially clean.

Dockage will be assessed on samples determined to be not commercially clean using the procedures outlined under *Determination of Dockage.*

Definition of commercially clean specifications for soybeans

	1	2	*3 (1+2)	4	5
	Material other than broken soybeans through the No. 8 round hole sieve.	Roughage and Hulls	Total roughage, hulls and material other than broken soybeans through the No. 8 round hole sieve.	Broken Soybeans through the No. 8 round hole sieve	
Grade name				Not direct exports	Direct exports
Soybeans 1,2,3,4,5 Canada	0.1%	0.2%	0.2%	0.8%	1.0%

Determination of dockage

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act as* "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Soybeans, Sample Canada (colour) Account Fireburnt
- Soybeans, Sample Salvage
- Soybeans, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Samples that are commercially clean do not go through the Carter dockage tester.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1kg.
   - Unofficial samples shall be at least 1kg.
2. Sieve the samples over the No. 8 round-hole hand sieve, using approximately 250 g at a time, to remove all readily removable material.
3. Set up the Carter dockage tester as follows:

Feed control	# 10
Air control	# 7
Riddle	none
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	off

4. Turn on the Carter dockage tester.
5. Pour the sample into the hopper.
6. After the sample has passed through the machine, turn off the machine.

7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material passing through the No. 8 round-hole sieve
- Up to 10% by weight of soft earth pellets handpicked from the sample
- Stems, pods, hulls, loose soybean seed coats, and coarse vegetable matter removed through aspiration with the Carter dockage tester or handpicked from the sample.

▲ **Important:** Return all pieces of soybeans or whole soybeans, sclerotinia, ergot, weed seeds or other grains removed by aspiration to the sample where they are assessed as grading factors.

Aspiration is used only as an aid to help speed up the removal of lightweight dockage material from the sample.

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of soybeans.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Soybeans, No. 1 Canada, Yellow
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of net weight.

Hazardous substances in samples

Wear gloves to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Non-registered varieties

Where grain of any kind is not a registered variety under the *Seeds Act*, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain. Soybeans of a variety not registered under the *Seeds Act* and listed in Appendix A of the Non-Registered Varieties of Chickpeas, Soybeans and Corn order, are permitted to be assigned a grade that is higher than the lowest grade established by regulation for that kind of grain.

Standards

Standards are prepared by the Canadian Grain Commission and are used for the assessment of visual grading factors as defined in the *Standard of quality*.
See Chapter 29 of this guide, Active Grain Standards and Guides List

Representative portions for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of soybeans for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Colour	working sample	working sample
Damage	50 g	250 g
Downy mildew	100 g	250 g
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	100 g	500 g
Heated, mouldy, rancid	50 g	500 g
Immature	50 g	250 g
Odour	working sample	working sample
Other colours	100 g	working sample
Sclerotinia sclerotiorum	500 g	working sample
Soft earth pellets	working sample	working sample
Splits, seed coats	250 g	working sample
Stained, mottled	working sample	working sample
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Images available on web version

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of damaged seeds. Colour is assessed against the *Degree of soundness* by using the applicable standard published for the grade.

Description used in grade determination table	Characteristics
Good natural colour	Soybeans that are sound, well matured and with very light amounts of adhered soil or seed coat discolouration
Slightly stained	Soybeans with moderate amounts of adhered soil or seed coat discolouration.
Stained	Soybeans with excessive amounts of adhered soil or seed coat discolouration.

See *Stained and Mottled*

Note: Yellow soybeans with green-coloured hulls, but are not *immature*, shall be graded no lower than *Soybeans, No.2 Canada Yellow*.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

▲ **Important:** Do not confuse pesticide treated seed with pokeweed stain, which is similar.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Soybeans, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Soybeans, Sample Condemned*.

Damage (DMG)

Damaged soybeans include those which are sprouted, frost-damaged, shriveled, ground-damaged, insect damaged, immature damaged, or otherwise unsound.

Procedures

Soybeans showing some indication of possible internal damage are to be cut for confirmation of damage.

See *Immature*
See *Stained and mottled*

Downy mildew (DWNY MIL)

Downy mildew is a superficial coating of downy or powdery fungal growth. Caused by *Peronospora manshurica*, it can sometimes form a white coating on soybeans. These are spores of the fungus. They do not affect the processing or safety of the seed but can affect the appearance.

An individual soybean is considered affected only if all of the fungal growth could be pulled together and the growth covers 50% or more of the surface area of the soybean.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
  See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure.
  See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Ergot attacks cereal crops and is not usually present in soybeans, which are a broadleaf crop.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Soybeans, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Soybeans, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt soybeans are seeds charred or scorched by fire. A cross-section of a fireburnt seed resembles charcoal with numerous air holes. The air holes result in a low weight seed which crumbles easily under pressure.

Procedures

Samples of soybeans containing fireburnt seeds are graded as *Soybeans, Sample Canada Account Fireburnt.*

Foreign material (FM)

Foreign material includes any material other than whole soybeans or split soybeans left in the sample after the removal of dockage.

Foreign material other than grain (FMXGRN)

Foreign material other than grain does not include ergot or stones, but does include

- Large weed seeds that did not pass through the No. 8 round-hole sieve
- Soft earth pellets which crumble under light pressure
- Soft fertilizer pellets
- Any other non-toxic material of a similar consistency
- Sclerotinia

Frost (FR)

Frost-damaged soybeans, when cut in cross-section, are

- Soybeans whose cotyledons are green or greenish-brown with a glassy wax-like appearance are considered frost-damaged.
- Seeds whose cotyledon are yellow or have just a halo of green around the outside of the cotyledon are considered sound, even if they are superficially affected by weathering.

See *Damage*

Heated (HTD)

- Soybeans with a light to dark brown cotyledon when cut in cross section are considered heated.
- Soybeans with a very light tan cotyledon when cut in cross section are considered damaged. See *Damage*.
- Heated seeds of other grains are included in the tolerance for *Heated.*

Hulls (HULLS)

See *Seed coats.*

Immature (IM)

Immature damaged soybeans are characterized by a green exterior appearance in conjunction with green discolouration penetrating the cotyledon.

Note: Soybeans that are green in appearance and have no discolouration of the cotyledon or just a halo of green around the outside of the cotyledon are to be assessed against the overall colour of the sample and are not to be graded lower than *Soybeans, No.2 Canada Yellow.*

Note: Soybeans of certain specialty varieties may have pure green interiors and should not be considered immature.

Procedure

Examination of the cotyledons is determined by cutting the soybeans in cross section. For grading purposes, immature damaged soybeans are considered as part of the “Total Damage” grade specification.

Insect Damage (I DMG)

Insect damaged kernels are characterized by a perforation of the seed coat in conjunction with a discoloration penetrating into the cotyledon.

See *Damage*

Mottled kernels

See *Stained and mottled.*

Mouldy (MLDY)

Mouldy soybeans are wrinkled and misshapen, and range in colour from medium to dark brown. Large areas of the affected soybean are superficially covered with a grey mould. Mouldy soybeans often have a spongy texture and usually give off an unpleasant odour. They are included in the tolerance for *Heated.*

Mudball soybean

A soybean completely covered with caked-on mud is considered damaged.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Grains grading No. 1 through 3 must have a natural odour. A sample would have to grade No. 4 for Damage before it could have a slight odour associated with low quality soybeans.

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
A distinct unnatural or objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Soybean, Sample Canada (colour) Account Odour*
A heated odour	*Soybean, Sample Canada (colour), Heated*
A fireburnt odour	*Soybean, Sample Canada (colour), Fireburnt*

Other colours (OCLR)

Colour is determined by the natural colour of the seed coat and may be yellow, green, brown or black.

Other colours includes any whole and split soybeans that are obviously of another colour.

▲ **Important:** Mixed soybeans are samples containing other colours of soybeans in excess of 15%. Mixed is added to the grade name as colour and assigned the appropriate grade.

Note: For soybeans with other types of seed coat discolouration See *Stained and mottled.*

Other grains (OGS)

All grains other than soybeans that remain in the sample after cleaning are considered other grains.

Pokeweed stain

See *Stained and mottled.*

Protein (PROT)

Protein content in soybeans is reported on a dry matter basis.

Purple mottling

See *Stained and mottled.*

Rancid

Soybeans in various stages of rancidity are characterized by a deep pink discolouration on the seed coat and varying degrees of discolouration of the cotyledon.

Seeds having a deep pink discolouration on the seed coat are cut and, based upon the extent of discolouration of the cotyledon, assessed as follows:

Discolouration of cotyledon	Assess as
No discolouration of cotyledon to slight discolouration just below seed coat.	Considered in the evaluation of colour.
Pink discolouration of cotyledon greater than just below the seed coat level but not throughout the entire seed.	Considered as *Damage.*
Pink discolouration extends throughout cotyledon.	Considered rancid and included in tolerance for *Heated.*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior. Sclerotinia is included in *Foreign material other than grain* for grade determination.

Seed coats (SDC)

- In commercially clean or processed samples, loose seed coats are assessed as *Splits.*
- In not commercially clean samples, loose seed coats are assessed as dockage.

Shrivelled (SHV)

If the soybean is shrivelled, small and flat, it has no oil value and is considered *Damaged.*

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures*.
- If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for *Foreign material other than grain.*

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of the cleaned sample.
3. If soft earth pellets are the grade determinant, grade the sample *Soybeans, Sample Canada (colour, Account Admixture.*

Splits (SPLTS)

Splits include split soybeans, broken seeds that are less than three-quarters of the whole seed, and cotyledons that are loosely held together by the seed coat.

Procedures

1. Any slotted hand sieve may be used to help separate splits from the sample.
2. Handpick any small whole soybeans that pass through the sieve and return them to the sample.
3. Handpick the remaining splits in the sample and add them to those removed by sieving.
4. Determine the total percentage by weight of splits.

Sprouted

If a soybean shows evidence of sprouting, it is *Damaged.*

Stained and mottled (STND)

Staining or mottling on the seed may be caused by weather, dirt, weed stain, disease, or varietal characteristic.

Staining and mottling are a component of colour which is evaluated on the cleaned sample after the removal of damaged seeds.

Limits are visible in the Canada standards, and are defined in the Degree of soundness as

Good natural colour	Canada No. 1
Slightly stained	Canada No. 2
Stained	Canada No. 3, 4 or 5

Procedures

Evaluate the staining or mottling according to the Degree of Soundness as reflected in the Standard for the grade.

Examination of the interior of the seed is required to assess for internal damage. Soybeans must be cut in cross section.

Various examples of seed coat discolouration can be seen on the web version of the OGGG.

Note: For soybeans which are clearly of another colour, see *Other colours*

Pokeweed stain

Pokeweed stain is a bright red staining of the soybean seed coat caused by the sap of the pokeweed berry. In some cases, the staining may appear similar to pesticide treated seeds of soybeans. It is assessed as *Stained and Mottled* against the Degree of Soundness using the Standardfor the grade.

▲ Important: Do not confuse pokeweed stain with pesticide treated seed or contaminated grain.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada samples of grain containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Soybeans, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada samples of grain containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Soybeans, Sample Canada (colour) Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Soybeans, Sample Salvage.*

- Examples: Western Canada

Excerpt from grade determination tables for
Soybeans, Canada

Grade name	Stones %
No. 1 Canada	0.0
No. 2 Canada	0.1
No. 3 Canada	0.1
No. 4 Canada	0.1
No. 5 Canada	0.1

Basic grade:..... *Soybeans, No. 1 Canada Yellow*

If the above sample contained	Grade in Western Canada
0.1% stones	*Soybeans, Rejected No. 1 Canada Yellow*
0.3% stones	*Soybeans, Rejected No. 1 Canada Yellow*
3.0% stones	*Soybeans, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Soybeans, Canada

Grade name	Stones %
No. 1 Canada	0.0
No. 2 Canada	0.1
No. 3 Canada	0.1
No. 4 Canada	0.1
No. 5 Canada	0.1

Basic grade:..... *Soybeans, No. 1 Canada Yellow*

If the above sample contained	Grade in Eastern Canada
0.1% stones	*Soybeans, No. 2 Canada Yellow*
1.0% stones	*Soybeans, Sample Canada Yellow Account Stones*
3.0% stones	*Soybeans, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Soybeans are graded without reference to variety.

Special analyses

Upon request, samples may be analyzed for other factors. The shipper of the soybeans indicates which factors are to be analyzed and which sieves to use.

Hilum colour (white hilum)

Hilum colour is not a grading factor.

Handpick a representative portion of not less than 100 g of the cleaned sample to determine the percentage by weight of Hilum colour.

Sizing

Analyse a representative portion of not less than 500 g of the cleaned sample. The shipper specifies the sieve size.

Primary and export grade determination tables

Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	No. 5 Canada	Grade, if No. 5 specs not met
Degree of soundness	Cool, natural odour, good natural colour	Cool, natural odour, may be slightly stained	Cool, natural odour; may be stained	Cool, may be stained	Cool, may be stained	
Minimum test weight kg/hL (g/0.5 L)	70 (356)	68 (346)	66 (335)	63 (320)	59 (298)	*Soybeans, Sample Canada (colour) Account Light Weight*
Variety *	Any variety of soybeans registered under the *Seeds Act*	Any variety of soybeans registered under the *Seeds Act*	Any variety of soybeans registered under the *Seeds Act*	Any variety of soybeans registered under the *Seeds Act*	Any variety of soybeans	
Other colours %	2	3	5	10	15	Appropriate mixed grade

Note: The colour is added to the grade name.

Note: The tolerance for other colours is not applicable for Mixed soybeans

(*) Soybeans of a variety not registered under the *Seeds Act* and listed in Appendix A to the annual Non-registered varieties order are permitted to be assigned a grade that is higher than the lowest grade established by regulation.

Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	No. 5 Canada	Grade, if No. 5 specs not met
Heat-damaged or mouldy %	0.0	0.2	1.0	3.0	5.0	*Soybeans, Sample Canada (colour) Account Heated or Mouldy*
Total % Damage	2	3	5	*8*	*15*	*Soybeans, Sample Canada (colour) Account Damaged*

Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	No. 5 Canada	Grade, if No. 5 specs not met
Ergot %	0.01	0.03	0.10	0.25	0.25	*Soybeans, Sample Canada (colour) Account Ergot*
Excreta %	0.01	0.01	0.01	0.01	0.01	*Soybeans, Sample Canada (colour) Account Excreta*
Foreign material other than grain %	0.1	0.3	0.5	2.0	3.0	*Soybeans, Sample Canada (colour) Account Admixture*
Stones %	0.0	0.1	0.1	0.1	0.1	2.5% or less - **West** - *Soybeans, Rejected (grade) Account Stones*, or **East** - *Soybeans, Sample Canada (colour) Account Stones* Over 2.5% - *Soybeans, Sample Salvage*
Total % Foreign material	1	2	3	*5*	*8*	*Soybeans, Sample Canada (colour) Account Admixture*

Soybeans, Canada Yellow, Green, Brown, Black or Mixed (CAN), other factors

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	No. 4 Canada	No. 5 Canada	Grade, if No. 5 specs not met
Downy mildew %	2	10	No limit	No limit	No limit	
Splits %	10	15	20	*30*	*40*	*Soybeans, Sample Canada (colour) Account Splits*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

No dockage is assessed on commercially clean export shipments.

Samples are considered commercially clean when the sample contains 0.2% or less by weight of pods, stems, or coarse vegetable matter, including 0.1% or less of material other than whole or broken soybeans that passes through the No. 8 round-hole sieve.

In addition, in samples of commercially clean export shipments, the amount of finely broken soybeans that passes through a No. 8 round-hole sieve

- On shipments from a terminal elevator, not for direct export, can be up to 0.8% by weight
- On shipments for direct export, can be up to 1.0% by weight

Definition of commercially clean specifications for soybeans

	1	2	*3 (1+2)	4	5
	Material other than broken soybeans through the No. 8 round hole sieve.	Roughage and Hulls	Total roughage, hulls and material other than broken soybeans through the No. 8 round hole sieve.	Broken Soybeans through the No. 8 round hole sieve	
Grade name				Not direct exports	Direct exports
Soybeans 1,2,3,4,5 Canada	0.1%	0.2%	0.2%	0.8%	1.0%

Not commercially clean (NCC)

Export shipments which do not meet the definition of commercially clean are considered not commercially clean and are allowed only with the permission of the CGC. Dockage is reported to the nearest 0.1%.

A deduction of up to 0.2% is applied to take into account the buildup of attritional material and hulls for direct exports only.

Grading

Soybeans on export are graded in accordance with the primary and export grade determination tables.

21. Faba beans

Determination of dockage 21-3
Definitions 21-3
Dockage not reported 21-3
Normal cleaning procedures 21-3
Composition of dockage 21-4
Commercially clean 21-5
Optional analysis 21-5

Grading 21-6
Important definitions 21-6
Net weight of sample 21-6
Hazardous substances in samples 21-6
Processed sample 21-6
Rounding rules 21-6
Non-registered varieties 21-6
Representative portions for grading 21-7

Grading factors 21-8
Blackened 21-8
Colour (CLR) 21-8
Contaminated grain 21-8
Cracked (CRKD) 21-9
Cracked seed coats (CSDC) 21-9
Damage (DMG) 21-9
Discoloured (DCLR) 21-9
Earth pellets (EP) 21-10
Ergot (ERG) 21-10
Excreta (EXCR) 21-10
Extraneous material 21-10
Fertilizer pellets (FERT PLTS) 21-10
Fireburnt (FBNT) 21-10
Foreign material (FM) 21-11
Green (GR) 21-11
Heated (HTD) 21-11
Insect parts (I PARTS) 21-11
Mouldy (MLDY) 21-11
Odour (ODOR) 21-11
Perforated (PERF) 21-11
Rime 21-12
Rotted (ROT) 21-12
Sclerotinia sclerotiorum (SCL) 21-12
Soft earth pellets (SEP) 21-12
Splits (SPLTS) 21-12
Sprouted (SPTD) 21-12
Stones (STNS) 21-13
Treated seed and other chemical substances 21-15
Variety (VAR) 21-15

Primary and export grade determination table 21-16
Faba beans, Canada (CAN), standard of quality 21-16
Faba beans, Canada (CAN), damage 21-16

Faba beans, Canada (CAN), foreign material 21-16

Export shipments 21-17
Commercially clean (CCLN) 21-17
Not commercially clean (NCC) 21-17
Grading 21-17

Determination of dockage

Definitions

Dockage is not assessed on faba bean samples that meet the commercially clean specifications set out in the Faba bean Export Shipments section. All samples must be analyzed to determine if they meet commercial cleanliness standards prior to dockage being assessed. The analysis of samples which are **clearly** not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.2% of foreign material then dockage will be assessed using the procedures defined under *Determination of Dockage.* Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed.

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Faba beans, Sample Canada Account Fireburnt
- Faba beans, Sample Salvage
- Faba beans, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.

   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.

2. Choose the appropriate hand sieve for the size of faba bean.

   No. 8 slotted
   No. 9 slotted
   No. 11 slotted

3. Sieve the samples over the appropriate slotted sieve, using approximately 250 g at a time, to remove all readily removable material.

4. Handpick all coarse vegetable matter such as pods, stems, straw, thistle tops from the sieved sample.

▲ **Important:** Do not handpick mineral matter, ergot, sclerotinia, or large-seeded grains other than faba beans from the sieved sample.

5. Handpick all grasshoppers, other insects and insect parts from the sieved sample.

Composition of dockage

- All material removed by sieving, handpicking or both, as defined in *Normal cleaning procedures*.
- Soft earth pellets, up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample

Commercially clean

Commercially clean samples exiting a primary elevator can have up to 0.8% finely broken faba beans removed by the No. 8 slotted sieve deducted as dockage. Samples exiting a primary elevator are considered commercially clean when meeting the requirements set out in the table below.

Definition of commercial cleanliness, Faba beans

Grade name	Foreign material	
	Material passing through No. 8 slotted sieve, including handpicked material %	Total %
No. 1 Canada	0.1	0.2
No. 2 Canada	0.1	0.2
No. 3 Canada	0.1	0.2

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of faba beans.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Faba beans, No. 1 Canada
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the *Seeds Act*, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portions for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of faba beans for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Damage	100 g	250 g
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	100 g	working sample
Heated or rotted	250 g	working sample
Insect parts	working sample	working sample
Mouldy	250 g	working sample
Odour	working sample	working sample
Perforated	100 g	250 g
Sclerotinia sclerotiorum	500 g	working sample
Splits	100 g	500 g
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Blackened

Faba beans are blackened when their seed coats are very dark blue to black.
See *Damage.*

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of damaged and split faba beans.

Terms used to describe colour in the grade determination tables

Term	Characteristics
Reasonably good natural colour	Faba beans are moderately immature, with lightly adhered soil, moderately discoloured from storage or other natural causes, such as mottling.
Fair colour	Faba beans are immature but not green, have moderate amounts of adhered soil, or are otherwise moderately discoloured from natural causes, such as mottling.
Poor colour	Faba beans have a dark discolouration covering less than half of the hull, where there is no penetration of the cotyledon.

Other terms used to describe colour

Term	Characteristics
Sunburned or oxidation	Faba beans have undergone normal discolouration of the seed coats during storage. The colour varies from light tan to brown to very dark brown, depending on the duration and conditions of storage.
Immature	Faba beans are normal size and greenish, but not distinctly green.

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and

fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Faba beans, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Faba beans, Sample Condemned*.

Cracked (CRKD)

Faba beans with a discoloured exposed cotyledon are considered cracked.
See *Damage.*

Cracked seed coats (CSDC)

Faba beans with cracked seed coats are considered sound if the halves of the kernels are held firmly together and the beans are not otherwise damaged.
See *Damage*

Damage (DMG)

Damage includes

- Blackened or cracked
- Sprouting
- Distinct immaturity
- Distinct deterioration or discolouration by weather or disease
- Insect damage
- Heat or mould damage
- Any other damage that seriously affects appearance or quality

Discoloured (DCLR)

Faba beans are considered discoloured if the discolouration on the seed coat covers more than half the bean or when the discolouration penetrates the cotyledon. See *Damage.*

Procedures

If the penetration of the discolouration is not obvious, cut the cotyledon crosswise in the discoloured area to determine the extent of the discolouration.

Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Faba beans, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Faba beans, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt faba beans are beans charred or scorched by fire. A cross-section of a fireburnt bean resembles charcoal with numerous air holes. The air holes result in a low weight bean which crumbles easily under pressure.

Procedures

Samples containing any fireburnt seeds are graded *Faba beans, Sample Canada Account Fireburnt.*

Foreign material (FM)

Foreign material is any material other than whole or split faba beans.

Green (GR)

Faba beans are considered green if they show distinctly green colour throughout the seed when cut to expose the cotyledons.
See *Damage.*

Heated (HTD)

Faba beans are considered heated or rotted if they are materially discoloured as a result of heating or rotting. Seed coats appear dark brown to black. The cotyledon tissue of dissected beans appears tan or brown. See *Damage.*

Heated seeds of other grains are included in the tolerance for *Heated.*

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.

If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain* Sample Account Odour.

Mouldy (MLDY)

Faba beans are considered mouldy if they show clear evidence of mildew or mould.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Faba beans, Sample CW/CE Account Odour*
An excessive heated odour	*Faba beans, Sample CW/CE Account Heated*
An excessive fireburnt odour	*Faba beans, Sample CW/CE Account Fireburnt*

Perforated (PERF)

Faba beans are considered perforated if they show clear evidence of hull perforations caused by insects or disease.

Rime

White rime is the adhered lining of the seed pod.

- Faba beans that are completely and densely covered with white rime are considered damaged. See *Damage.*
- When the rime is sparse enough to expose the soundness of the bean, the bean is sound and the rime is considered in the general appearance of the sample.

Rotted (ROT)

See *Heated.*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures.*
- If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for *Foreign Material.*

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of the cleaned sample.
3. If soft earth pellets are the grade determinant, grade the sample *Faba beans, Sample Canada Account Admixture*.

Splits (SPLTS)

Splits include

- Halves or smaller pieces of faba beans
- Halves that are loosely held together by cracked seed coats
- Faba beans with cracked cotyledons, such as from artificial drying

Splits do not include faba beans that are otherwise damaged.

Sprouted (SPTD)

Faba beans in which the hull is parted over the area of the germ as a result of sprouting are considered damaged. See *Damage.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

- Samples of grain grown in western Canada containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Faba beans, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- Samples of grain grown in eastern Canada containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Faba beans, Sample Canada Account Stones.*
- Samples of western and eastern Canadian grain containing more than 2.5% stones are graded *Faba beans, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Faba beans, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.2
No. 3 Canada	0.5

Basic grade:..... *Faba beans, No. 2 Canada*
Reason for basic grade:..... 2.0% Damage

If the above sample contained	Grade in western Canada
0.4% stones	*Faba beans, Rejected No. 2 Canada Account Stones*
1.0% stones	*Faba beans, Rejected No. 2 Canada Account Stones*
3.0% stones	*Faba beans, Sample Salvage*

Examples: Eastern Canada

Excerpt from grade determination tables for
Faba beans, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.2
No. 3 Canada	0.5

Basic grade:..... *Faba beans, No. 2 Canada*
Reason for basic grade:..... 2.0% Damage

If the above sample contained	Grade in eastern Canada
0.4% stones	*Faba beans, No. 3 Canada*
1.0% stones	*Faba beans, Sample Canada Account Stones*
3.0% stones	*Faba beans, Sample Salvage*

Treated seed and other chemical substances

See Contaminated grain.

Variety (VAR)

Faba beans are graded without reference to variety.

Primary and export grade determination table

Faba beans, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Reasonably well matured, reasonably good natural colour	Fairly well matured, fair colour	Cool and sweet, excluded from higher grades on account of immaturity, poor colour or damage	
Variety	Any variety of faba beans registered under the *Seeds Act*	Any variety of faba beans registered under the *Seeds Act*	Any variety of faba beans	
Splits %	6	9	12	Faba beans, Sample Canada Account *Splits*

Faba beans, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated or rotted %	0.0	0.3	1.0	*Faba beans, Sample Canada Account Heated*
Mouldy %	0.0	0.6	2.0	*Faba beans, Sample Canada Account Mouldy Kernels*
Perforated damage %	1	3	3	*Faba beans, Sample Canada Account Damaged*
Total % Damage	4	6	10	*Faba beans, Sample Canada Account Damaged*

Faba beans, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Faba beans, Sample Canada Account Ergot*
Excreta %	0.01	0.01	0.01	*Faba beans, Sample Canada Account Excreta*
Insect parts %	0.02	0.02	0.02	*Faba beans, Sample Canada Account Admixture*
Sclerotinia %	0.05	0.05	0.05	*Faba beans, Sample Canada Account Admixture*
Stones or shale %	0.1	0.2	0.5	2.5% or less - **West** - *Faba beans, Rejected (grade) Account Stone*s, or **East** - *Faba beans, Sample Canada Account Stones* Over 2.5% - *Faba beans, Sample Salvage*
Total % Foreign material	0.2	0.5	2.0	*Faba beans, Sample Canada Account Admixture*

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

Dockage is not reported for commercially clean export shipments. A deduction for finely broken faba beans removed by the No. 8 slotted sieve as dockage is allowed

- On shipments from a terminal elevator, not for direct export, of up to 0.8%
- On shipments for direct export, of up to 1.0%

Definition of commercial cleanliness, Faba beans

Grade name	Foreign material	
	Material passing through No. 8 slotted sieve, including handpicked material %	Total %
No. 1 Canada	0.1	0.2
No. 2 Canada	0.1	0.2
No. 3 Canada	0.1	0.2

Not commercially clean (NCC)

Export shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A direct deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Faba beans on export are graded in accordance with the primary and export grade determination tables.

22. Chickpeas

Classes, types and varieties **22-2**
Classes 22-2

Determination of dockage **22-3**
Definitions 22-3
Dockage not reported 22-3
Normal cleaning procedures 22-3
Composition of dockage 22-4
Optional analysis 22-4
Sizing 22-4

Grading **22-5**
Important definitions 22-5
Net weight of sample 22-5
Hazardous substances in samples 22-5
Processed sample 22-5
Rounding rules 22-5
Non-registered varieties 22-5
Representative portion for grading 22-6

Grading factors **22-7**
Colour (CLR) 22-7
Contaminated grain 22-7
Damage (DMG) 22-8
Earth pellets (EP) 22-8
Ergot (ERG) 22-8
Excreta (EXCR) 22-8
Extraneous material 22-8
Fertilizer pellets (FERT PLTS) 22-9
Fireburnt (FBNT) 22-9
Foreign material (FM) 22-9
Green (GR) 22-9
Heated (HTD) 22-10
Insect parts (I PARTS) 22-10
Mechanical damage including splits (MDMGINCSPLTS) 22-10
Odour (ODOR) 22-10
Sclerotinia sclerotiorum (SCL) 22-11
Soft earth pellets (SEP) 22-11
Stones (STNS) 22-11
Treated seed and other chemical substances 22-11

Primary and export grade determination tables **22-12**
Chickpeas, Canada Western Kabuli (CW), standard of quality 22-12
Chickpeas, Canada Western Kabuli (CW), damage 22-12
Chickpeas, Canada Western Kabuli (CW), foreign material 22-12
Chickpeas, Canada Western Desi (CW), standard of quality 22-13
Chickpeas, Canada Western Desi (CW), damage 22-13
Chickpeas, Canada Western Desi (CW), foreign material 22-13

Export shipments **22-14**

Classes, types and varieties

Classes

There are two classes of chickpeas, Kabuli and Desi.

- Kabuli chickpeas are typically whitish to light tan in colour however there are new varieties that are black or green in color.
- Desi chickpeas are typically brown in colour and smaller than Kabuli.

The class of chickpea forms part of the grade name; for example,
Chickpea, No. 1 CW Kabuli.

The method of determining the class of a chickpea is by the size and colour of the chickpea.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the gross weight of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Chickpeas, Sample CW (class) Account Fireburnt
- Chickpeas, Sample Salvage
- Chickpeas, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples shall be at least 1 kg.
   - Unofficial samples shall be at least 1 kg.
2. Choose the hand sieve for the class of chickpeas that will achieve maximum removal of dockage material with minimum loss of chickpeas:
   - **Kabuli:** No. 18 round-hole sieve (large seeded)
     No. 12 slotted sieve (medium seeded)
     No. 14 slotted sieve
     No. 16 slotted sieve
   - **Desi:** No. 12 slotted sieve
3. Sieve the sample, using approximately 250 grams at a time, over the appropriate sieve to remove all readily removable material.
4. Handpick all coarse vegetable matter such as pods, stems, straw, thistle tops from the sieved sample.
5. Handpick all grasshoppers, other insects and insect parts from the sieved sample.

Composition of dockage

All material removed by sieving or handpicking or both, as defined in *Normal cleaning procedures.*

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - The percentage by gross weight to the nearest 0.1% and the grade of chickpeas.
   - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - The percentage of dockage.

   Example
   95.0% Chickpeas, No. 1 Canada Western Desi
   4.0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Sizing

Upon written request, samples of chickpeas may be analyzed for size Sizing procedures are as follows:

Procedures

1. Using a Boerner-type divider, divide the clean sample to obtain a representative portion of between 250 – 300 grams.
2. Pour the representative sample onto the left-hand side of the hand sieve.
3. Move the sieve from left to right 20 times, using a sifting motion. One time is one complete motion from center, to one side, to the other side and back to the center. The total distance from left to right is 20 cm or about 8 inches.
4. Determine the amount remaining on top of the sieve. Passing your hand along the underside of the sieve may be necessary in order to dislodge all the seeds.
5. Report the percent by weight of the seeds remaining on top of the sieve.

   Note: The size of sieve must be clearly indicated on the written request. Generally, sizing would be done using one of the following hand sieves – No. 8, 9 or 10 mm round hole, however, the analysis can be done on any sieve size as requested.

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is called the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

Where grain of any kind is not a registered variety under the Seeds Act, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain. The Non-Registered Varieties of Chickpeas, Soybeans and Corn order is issued annually to allow non-registered varieties of chickpeas to be graded higher than the lowest statutory grade.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of chickpeas for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Colour	working sample	working sample
Damage	100 g	250 g
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	100 g	working sample
Green	100 g	250 g
Insect parts	working sample	working sample
Mechanical damage including splits	100 g	250 g
Odour	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Colour (CLR)

Colour is a grade determinant only in the Kabuli class. Colour is assessed after the removal of damaged chickpeas and chickpeas assessed as green. See *Damaged* and *Green*.

If chickpeas are . . .	**Colour is . . .**
Sound, well matured and have a uniform normal colour	Good
Immature, but not green, have moderate amounts of adhered soil, are lightly stained or otherwise moderately discoloured from natural causes	Fair
Do not meet the definition of fair colour	Poor

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Chickpeas, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Chickpeas, Sample Condemned*.

Damage (DMG)

Damaged chickpeas include

- Whole or broken chickpeas that are sprouted, frost damaged, heated, damaged by insects, distinctly deteriorated or discoloured by weather or by disease, or that are otherwise damaged in a way that seriously affects their quality.

Note: for frost damaged kernels, use the following table:

Frost damage	Considered as
Frost-damaged chickpeas which are green	Green
Frost-damaged chickpeas with no green colour	Damage

Procedures

In Kabuli chickpeas, white and shriveled chickpeas and yellow or water stained chickpeas should be cut and examined for damage. If the cotyledons show

- Any signs of visible damage, they are considered damaged
- No signs of visible damage, they are considered in the evaluation of colour

Earth pellets (EP)

See *Foreign material*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies that have a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Chickpeas, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Chickpeas, Sample Condemned*.

Fireburnt (FBNT)

Fireburnt seeds have been charred or scorched by fire. No fireburnt seeds are allowed in chickpeas.

Procedures

Samples considered fireburnt are graded *Chickpeas, Sample CW (class) Account Fireburnt.*

Foreign material (FM)

Foreign material includes

- Other classes of chickpeas
- Other grains and seeds
- Ergot and Sclerotinia
- Mineral matter, stones and earth pellets
- Any other material not removed by *Normal cleaning procedures*

Green (GR)

Chickpeas may be considered green regardless of the cause. (Does not apply to green coloured varieties)

Frost-damaged chickpeas which are green are considered under the grade determinant for *Green*.

Frost-damaged chickpeas with no green colour are considered under the grade determinant for *Damage*.

Kabuli chickpeas are considered green if they show any green colour of any size area anywhere on the seeds or seed coats.

Desi chickpeas are considered green if they show distinctly green colour throughout the seed when cut to expose the cotyledons.

Heated (HTD)

Chickpeas that have dull seed coats and discoloured cotyledons ranging from light tan to dark brown are considered heated. See *Damage.*

Heated seeds of other grains are included in the tolerance for *Damage.*

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.

If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain* Sample Account Odour.

Mechanical damage including splits (MDMGINCSPLTS)

In chickpeas, mechanical damage including splits includes

- Whole chickpeas with more than 10% of the chick pea broken off
- Split chickpeas

▲ **Important:** Seeds with hairline cracks and chipped seed coats are not considered mechanical damage.

Procedures

Chickpeas with mechanical damage are hand-picked from the cleaned sample.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

If odour is the grade determinant and there is . . .	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Chickpeas, Sample CW (class) Account Odour*
A distinct heated odour	*Chickpeas, Sample CW (class) Account Heated*
A distinct fireburnt odour	*Chickpeas, Sample CW (class) Account Fireburnt*

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior. See *Foreign material*

Soft earth pellets (SEP)

See *Foreign material.*

Stones (STNS)

See *Foreign material*.

Treated seed and other chemical substances

See *Contaminated grain*

Primary and export grade determination tables

Chickpeas, Canada Western Kabuli (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW
Colour	Good natural colour	Fair colour	Poor colour
Variety	Any variety of Kabuli Chickpeas	Any variety of Kabuli Chickpeas	Any variety of Kabuli Chickpeas

Chickpeas, Canada Western Kabuli (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Damage %	0.5	1.0	2.0	*Chickpeas, Sample CW Kabuli Account Damaged*
Mechanical damage including splits %	1	2	3	*Chickpeas, Sample CW Kabuli Account Mechanical Damage including Splits*
Green %	0.5	1.0	2.0	*Chickpeas, Sample CW Kabuli Account Green*

Chickpeas, Canada Western Kabuli (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Chickpeas, Sample CW Kabuli Account Ergot*
Excreta %	0.01	0.01	0.01	*Chickpeas, Sample CW Kabuli Account Excreta*
Insect parts %	0.02	0.02	0.02	*Chickpeas, Sample CW Kabuli Account Foreign Material*
Total % Foreign material	0.1	0.2	0.2	*Chickpeas, Sample CW Kabuli Account Foreign Material*

Chickpeas, Canada Western Desi (CW), standard of quality

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW
Variety	Any variety of Desi Chickpeas	Any variety of Desi Chickpeas	Any variety of Desi Chickpeas

Chickpeas, Canada Western Desi (CW), damage

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Damage %	1	2	3	*Chickpeas, Sample CW Desi Account Damaged*
Mechanical damage including splits %	2.0	3.5	5.0	*Chickpeas, Sample CW Desi Account Mechanical Damage including Splits*
Green %	1.0	2.0	3.0	*Chickpeas, Sample CW Desi Account Green*

Chickpeas, Canada Western Desi (CW), foreign material

Grading factor	No. 1 CW	No. 2 CW	No. 3 CW	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	*Chickpeas, Sample CW Desi Account Ergot*
Excreta %	0.01	0.01	0.01	*Chickpeas, Sample CW Desi Account Excreta*
Insect parts %	0.02	0.02	0.02	*Chickpeas, Sample CW Desi Account Foreign Material*
Total % Foreign material	0.1	0.2	0.2	*Chickpeas, Sample CW Desi Account Foreign Material*

Export shipments

Chickpeas on export are graded in accordance with the primary and export grade determination tables. Foreign material in processed chickpeas is treated as a grading factor. Cargoes containing dockage may not be shipped except with permission from the CGC.

23. Canary seed

Classes, types and varieties **23-2**
Types 23-2
Itchy 23-2
Hairless 23-2

Determination of dockage **23-3**
Definitions 23-3
Dockage not reported 23-3
Normal cleaning procedures 23-3
Composition of dockage 23-4
Optional analysis 23-4

Grading **23-5**
Important definitions 23-5
Net weight of sample 23-5
Hazardous substances in samples 23-5
Processed sample 23-5
Rounding rules 23-5
Non-registered varieties 23-5
Representative portion for grading 23-6

Grading factors **23-7**
Contaminated grain 23-7
Earth pellets (EP) 23-7
Ergot (ERG) 23-8
Excreta (EXCR) 23-8
Extraneous material 23-8
Fertilizer pellets (FERT PLTS) 23-8
Fireburnt (FBNT) 23-8
Foreign material (FM) 23-8
Glabrous (GLB) 23-8
Heated kernels (HTD) 23-9
Hulled seeds (HULL) 23-9
Inert material (INERT MTL) 23-9
Odour (ODOR) 23-9
Rotted (ROT) 23-9
Soft earth pellets (SEP) 23-10
Stones (STNS) 23-10
Treated seed and other chemical substances 23-10
Variety (VAR) 23-10

Primary and export grade determination table **23-11**
Canary Seed, Canada (CAN), standard of quality 23-11
Canary Seed, Canada (CAN), foreign material 23-11

Export shipments **23-12**
Determination of dockage 23-12
Grading 23-12

Classes, types and varieties

Types

There are two main types of canary seed, itchy and hairless.

Itchy

The term refers to varieties which have tiny, sharp hairs (spicules) attached to the hull.

Hairless

The term refers to varieties which don’t have tiny hairs (spicules) attached to the hull. These varieties are commonly referred to as glabrous.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the *Canada Grain Act* as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain". Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the gross weight of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for

- Canary Seed, Sample CW/CE Account Fireburnt
- Canary Seed, Sample Salvage
- Canary Seed, Sample Condemned
- Unofficial samples declared as processed

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	No. 3
Air control	Minimum No. 3.5 (may be increased to remove the maximum amount of light weight material without removing whole seeds)
Riddle	No. 000 or No. 1 (for large seeds)
Top sieve	No. 4.5 round-hole
Centre sieve	Blank tray
Bottom sieve	None
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.

   Official samples shall be at least 1 kg.

   Unofficial samples shall be at least 1 kg.

3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.

6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. The sample portion removed through the No. 4.5 round-hole machine sieve, is passed over a No. 4.5 round-hole hand sieve. Whole and hulled seeds remaining on top of the No. 4.5 round-hole hand sieve are returned to the sample.
9. Using a Boerner-type divider, divide the sample to a representative portion of not less than 20g.
10. Analyze the representative portion to determine the percentage by weight of admixture remaining in the sample.
11. Analyze the representative portion to determine the percentage by weight of hulled seeds in the sample.
12. Determine dockage using the list under *Composition of dockage.*

Composition of dockage

Dockage includes:

- material removed by the riddle
- material removed by aspiration
- material that passes through the No. 4.5 round-hole hand sieve (see *Normal cleaning procedures* step 8)
- admixture handpicked from the cleaned sample
- hulled seeds handpicked from the cleaned sample and recorded as a percentage of the gross weight of the sample

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported.

Procedures

1. Analyze the official sample.
2. Record the following on inspection records:
   - percentage by gross weight to the nearest 0.1% and the grade of canary seed
   - percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
   - percentage of dockage

   Example:
   95.0% Canary Seed, Canada
   4. 0% Domestic Mustard Seed, No. 1 Canada Oriental
   1.0% dockage

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in section 1 of the Canada Grain Regulations as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination table.

Non-registered varieties

Where grain of any kind is not a registered variety under the *Seeds Act*, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of canary seed for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Ergot	500 g	working sample
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	50 g	250 g
Glabrous	1 g	5 g
Heated	50 g	250 g
Inert material	working sample	working sample
Odour	working sample	working sample
Soft earth pellets	working sample	working sample
Stones	250 g	working sample
Treated seeds	working sample	working sample

Grading factors

Images available on web version

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residue either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Canary Seed, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Canary Seed, Sample Condemned*.

Earth pellets (EP)

Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*

Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Canary Seed, Held IP Suspect Contaminated Grain*. The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Canary Seed, Sample Condemned*.

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour or pieces of charred wood.

Foreign material (FM)

Foreign material is assessed in processed samples only. It includes all material other than whole, broken or hulled canary seed.

See *Hulled seeds*

Glabrous (GLB)

Refers to canary seed varieties which do not have tiny sharp hairs or spicules attached the hull. Also known as hairless.

Note: On written request, the percentage of glabrous can be reported in the remarks section of grading certificate

Heated kernels (HTD)

Heated kernels are red or orange, and have the odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. Rotted kernels are included in the tolerance for *Heated*.

Heated seeds of other grains are included in the tolerance for *Heated.*

Hulled seeds (HULL)

Hulled seeds are canary seeds that have their hulls removed.

They are considered dockage and reported as a percentage of the gross weight of the sample.

Note: In processed samples, hulled seeds are not considered foreign material. They are reported as a percentage of the gross weight of the sample.

Inert material (INERT MTL)

Inert material refers to mineral matter such as stones, coal shale and hard and soft earth pellets.

Odour (ODOR)

There is no numeric tolerance for odour. Consider:

- basic quality of the sample
- type and degree of the odour
- presence of visible residue causing the odour

If odour is the grade determinant and there is …	**Then the grade is…**
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Canary Seed, Sample CW/CE Account Odour*
A distinct heated odour	*Canary Seed, Sample CW/CE Account Heated*
A distinct fireburnt odour	*Canary Seed, Sample CW/CE Account Fireburnt*

Rotted (ROT)

See *Heated kernels.*

Soft earth pellets (SEP)

Soft earth pellets are:

- earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- any non-toxic material of similar consistency

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets constituting 10% or less of the sample are assessed as dockage.
3. Where soft earth pellets represent more than 10% of the net weight, the sample is graded: *Canary Seed, Sample CW/CE Account Admixture.*

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

Treated seed and other chemical substances

See *Contaminated Grain*.

Variety (VAR)

Canary seed is graded without reference to variety.

Primary and export grade determination table

Canary Seed, Canada (CAN), standard of quality

Grading factor	Canada Canary Seed	Grade, if Canary Seed specs not met
Degree of soundness	Reasonably well mature, cool and sweet	
Fireburnt %	0.0	Canary Seed, Sample Canada Account Fireburnt
Heated and binburnt %	1.0	Canary Seed, Sample Canada Account Heated

Canary Seed, Canada (CAN), foreign material

Grading factor	Canada Canary Seed	Grade, if Canary Seed specs not met
Ergot %	0.04	Canary Seed, Sample Canada Account Ergot
Excreta %	0.01	Canary Seed, Sample Canada Account Excreta
Inert material %	0.2	Canary Seed, Sample Canada Account Inert Material
Total % Foreign material	1.0	Canary Seed, Sample Canada Account Admixture

Export shipments

Cargoes containing dockage may not be shipped except with permission from the Canadian Grain Commission.

Determination of dockage

Refer to the *Determination of dockage* procedures described in this chapter. Dockage is reported to the nearest 0.1%.

Grading

Canary seed on export is graded in accordance with the primary and export grade determination table.

24. Screenings

Composition of screenings **24-2**
Whole grain in screenings 24-2
Canola, rapeseed or domestic mustard seed in screenings 24-3
Dockage 24-3
Rounding rules 24-3

Grading factors **24-4**
Ergot (ERG) 24-4
Excreta (EXCR) 24-4
Extraneous material 24-4
Heated, fireburnt and odour (HTD, FBNT, ODOR) 24-4
Injurious seeds 24-4
Knuckles and straw, (KNKLS&STRAW) 24-4
Mustard seed (MUS) 24-5
Other domestic grains 24-5
Other large seeds (OLSDS) 24-5
Sclerotinia sclerotiorum (SCL) 24-5
Soft earth pellets (SEP) 24-5
Stones (STNS) 24-5

Other factors **24-6**
By-products of a manufacturing process 24-6
Pelleted screenings 24-6

Cleaning screenings **24-7**
Feed screenings 24-7
Uncleaned screenings 24-7
Refuse screenings 24-7
Notation as to kind 24-7

Grade determination tables **24-8**
Screenings, standard of quality 24-8
Screenings, maximum tolerances 24-8
Screenings, maximum tolerances included in totals 24-8

Mixed Feed Oats **24-9**
Cleaning 24-9
Composition 24-9

Composition of screenings

Screenings consist of dockage material that qualifies only for Class IV grades. Screenings are graded in accordance with the specifications in the *Off-grades of Grain and Grades of Screenings* order.

Show the composition of screenings in detail on all records for carlots and cargoes. The composition determines the market value of the screenings.

Whole grain in screenings

Whole grain in screenings includes wheat, rye, barley, oats, triticale, flaxseed, rapeseed, canola, domestic mustard seed and pulses.

At a terminal or process elevator, show the percentage by weight and the grade of whole grain in screenings on all inspection records and grade certificates and as part of the grade name, if

- Shipments contain 6.0% or over by weight of whole grain which can be separated by the usual cleaning methods
- The grain qualifies for an official, special or off-grade

For example,

Grade: *Refuse Screenings, less 15.0% Wheat, CW/CE Feed*	
Composition	10.0% chaff
	15.0% Wheat CW/CE Feed
	8.0% large seeds
	67.0% small seeds and dust
Total	**100.0%**

Report the percentage by weight and the kinds of whole grain in the sample for samples representing shipments from primary elevators or unlicensed warehouses to destinations other than terminal elevators.

For example,

Grade: *Refuse Screenings, less 15.0% Wheat*	
Composition	10.0% chaff
	15.0% Wheat
	8.0% large seeds
	67.0% small seeds and dust
Total	**100.0%**

Canola, rapeseed or domestic mustard seed in screenings

Record the percentage by weight of whole seeds of small oilseeds, canola, rapeseed or domestic mustard seed, that can be separated from samples of screenings by approved sieves.

Include small, shrivelled or broken seeds which pass through the slotted sieve in the total percentage by weight of small seeds and dust.

Dockage

Dockage is not assessed for screenings except for *Mixed Feed Oats.*

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Grading factors

Ergot (ERG)

Ergot is a disease that attacks cereal grains and results in a fungus growth in place of the kernel of grain. The disease produces elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Extraneous material

Can be defined as glass, metal, wood, plastic or any other material not already defined in the Official Grain Grading Guide.

Heated, fireburnt and odour (HTD, FBNT, ODOR)

Screenings that are not sweet are graded according to their composition with the condition included in the grade name.

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Screenings, (Grade Name) Account Odour*
An excessive heated odour	*Screenings, (Grade Name) Account Heated*
An excessive fireburnt odour	*Screenings, (Grade Name) Account Fireburnt*

Injurious seeds

The following seeds are designated by the Feeds Regulations as detrimental to animal health:

bird rape
cockle, cow
cockle, purple
darnel
false flax, flat-seeded
false flax, small-seeded
false flax, western (large seeded)
mustard, black
mustard, Indian
mustard, hare's-ear
mustard, tumble
mustard, wild
mustard, wormseed
stinkweed

Knuckles and straw, (KNKLS&STRAW)

Knuckles include empty wheat heads, nodes of stems and short pieces of straw up to approximately 2.5 cm in length.

Mustard seed (MUS)

Common wild mustard and hare's ear mustard seed are designated as injurious in the Canada Feed Regulations.

Other domestic grains

Other domestic grains are any grains other than wheat, rye, barley, oats, triticale, flaxseed, solin, rapeseed, canola, domestic mustard seed and pulses.

Other large seeds (OLSDS)

Other large seeds are seeds not designated as injurious in the Canada Feed Regulations. They include lady's thumb and pale smartweed.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Soft earth pellets (SEP)

Soft earth pellets include soft fertilizer pellets and any other nontoxic material of a similar consistency.

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, fertilizer pellets and other nontoxic materials of similar consistency.

Other factors

By-products of a manufacturing process

By-products of a manufacturing process are materials such as malt sprouts, oat hulls, ground and pelleted material. They do not qualify as grain screenings.

If inspection is requested on material that is wholly or partly processed grain screenings, it is graded *Sample* according to the dominant product, for example, *Sample Malt Sprouts, Sample Screenings, Ground; Sample Oat Hulls*.

Pelleted screenings

When official weighing or inspection of pellets made from Canadian grain screenings is requested, the official description is *Canadian ground and pelleted screenings*.

At the request of a shipper, you may show the prime source of screenings in parentheses following the description, for example, *Canadian ground and pelleted screenings (flaxseed)*.

If you are in doubt about the source, you may request a letter of certification from the shipper certifying the source of the screenings. Shippers may also request to have the word *grain* included in the description of the pellets, for example, *Canadian ground and pelleted grain screenings*.

Pellets received into terminal elevators made from processing residues of agricultural products are described as simply as possible, for example, *Canadian canola extraction pellets, Canadian wheat bran pellets, Canadian beet pulp pellets.* You must be reasonably certain of the source or country of origin.

Cleaning screenings

Feed screenings

1. Divide a representative portion of approximately 500 g from the sample.
2. Sift the portion over the No. 4.5 round-hole sieve to assess the percentage of small weed seeds, chaff, hulls, dust, etc.
3. Handpick a representative portion of at least 10 g to determine the components of the sample.
4. Show the composition in detail in all records and endorse the backs of certificates.

Uncleaned screenings

Uncleaned screenings do not meet the specifications for No. 1 or No. 2 Feed screenings because of their content of weed seeds, hulls, chaff or dust. Uncleaned screenings must contain at least 35.0% of material that if separated would meet the grade requirements for No. 1 Feed screenings.

1. Divide a representative portion of not less than 750 g from the uncleaned sample.
2. Sift the portion over the No. 4.5 round-hole sieve to assess the percentage by weight of small weed seeds and dust.
3. Handpick a representative portion not less than 10 g to determine the components of the sample.
4. Show the composition of the sample in detail on all records and endorse the backs of certificates.

Refuse screenings

Refuse screenings do not meet the grade requirements for *Uncleaned screenings* because of their content of weed seeds, chaff or dust.

1. Divide a representative portion of not less than 250 g from the uncleaned sample.
2. Sift the representative portion over the No. 5 buckwheat and the No. 4.5 round-hole sieves nested to determine the percentage by weight of seeds.
3. Class as large seeds those that pass through the No. 5 buckwheat sieve but remain on top of the No. 4.5 round-hole.
4. Class as small seeds material that passes through the No. 4.5 round-hole sieve.
5. Handpick a representative portion of at least 25 g of the material remaining on top of the 5 buckwheat sieve.

Notation as to kind

When no written request is received for a notation as to kind, such a notation is entered on the records only and it is stated that the notation does not appear on the certificate, for example, *Canola—not shown on certificate*.

Grade determination tables

Screenings, standard of quality

Grading factor	No. 1 Feed Screenings	No. 2 Feed Screenings	Uncleaned	Refuse	Grade, if specs not met
Degree of soundness	Must be cool and sweet	Must be cool and sweet	No requirements	No requirements	*(Grade name)", Account Heated, or Fireburnt, or Odour*
Minimum quantity of shrunken or broken grain %	35	No minimum	*	No minimum	

Screenings, maximum tolerances

Grading factor	No. 1 Feed Screenings	No. 2 Feed Screenings	Uncleaned	Refuse	Grade, if specs not met
Ergot %	0.1	0.1	0.1	0.1	*(Grade name) Screenings, Ergoty*
Excreta %	0.02	0.02	0.10	0.10	*Sample Screenings, Account Excreta*
Other domestic grains %	0	5	10	10	*Sample Screenings, with composition in remarks*
Other large seeds %	10	No limit	*	No limit	
Sclerotinia %	0.25	0.25	0.25	0.25	*Sample Screenings, Account Sclerotinia*
Stones %	0.3	0.3	0.5	0.5	*Sample Screenings, Account Stones*
Wild buckwheat %	65	No limit	*	No limit	
Wild oats %	8	49	49	No limit	
Wild oat hulls	N/A	N/A	1	No limit	
Other than hare's ear or wild mustard seed %	1	1	*	No limit	
Total % Injurious seeds	2	2	*	No limit	

Screenings, maximum tolerances included in totals

Grading factor	No. 1 Feed Screenings	No. 2 Feed Screenings	Uncleaned	Refuse	Grade, if specs not met
Straw %	0.3	0.3	5.0	No limit	
Total % Knuckles and straw	3	3	5	No limit	
Hulls %	1	1	*	No limit	
Soft earth pellets %	1	1	3	3	*Sample Screenings, Account Soft Earth Pellets*
Total % Including weed seeds which pass through a No. 4.5 round-hole sieve, chaff, dust	3	3	*	No limit	
Hares ear or wild mustard seed %	2	2	*	No limit	
Total % Including canola, rapeseed, wild and domestic mustard seed	6	10	*	No limit	

Note: Each highlighted total includes all factors within this table listed prior to the total.

* Sample must contain 35% of material that qualifies for No. 1 Feed Screenings.

Mixed Feed Oats

Cleaning

1. Divide a representative portion of at least 750 g from the uncleaned sample.
2. Sift the representative portion over the No. 4.5 round-hole sieve to remove up to 1% by weight of small weed seeds, chaff and dust.

   If more than 1% of small seeds, chaff and dust passes through the No. 4.5 round hole sieve,
   1. Assess dockage.
   2. Record dockage to the nearest 0.1%.
3. Handpick soft earth pellets from the cleaned sample.
   - For samples containing up to 10% by weight of soft earth pellets, assess earth pellets as dockage.
   - For samples containing over 10% soft earth pellets by weight, grade *Sample Screenings, Account Earth Pellet*s.
4. Show the composition in detail on all records for carlots and cargoes.

Composition

Samples must contain at least 50% by weight of wild oats.

Grade name	Material through No. 4.5 round-hole sieve %	Wild buckwheat, wheat heads, knuckles, straw and chaff			
		Knuckles, straw and chaff %	Wheat heads %	Wild buckwheat %	Total %
Mixed Feed Oats	1	4	5	5	5
No. 2 Mixed Feed Oats	1	4	5	5	10
Grade, if No. 2 specs not met	Report as dockage to the nearest 0.5%				

Grade name	Ergot %	Excreta %	Flaxseed %	Heated %	Other domestic grains %	Sclerotinia %	Stones %
Mixed Feed Oats	0.25	0.02	5	5	5	0.25	0.1
No. 2 Mixed Feed Oats	0.33	0.02	5	10	5	0.25	0.2
Grade, if No. 2 specs not met	*Mixed Feed Oats, Ergoty*	*Mixed Feed Oats, Excreta*		*Mixed Feed Oats, Heated*		*Sample Screenings Account Sclerotinia*	*Sample Screenings Account Stones*

25. Experimental grades of wheat

Criteria for designation as experimental grades 25-2

Wheat 25-3
- Classes and varieties 25-3
- Cleaning 25-3
- Feed or sample grades 25-3
- Rounding rules 25-3
- Representative portion for grading 25-3

Grading factors 25-4
- Contaminated grain 25-4
- Degermed (DGM) 25-4
- Extraneous material 25-4
- Fertilizer pellets (FERT PLTS) 25-5
- Grass green (GRASS GR) 25-5
- Hard vitreous kernels (HVK) 25-5
- Insect damage (I DMG) 25-5
- Stones (STNS) 25-5
- Test weight (TWT) 25-6
- Treated seed and other chemical substances 25-6

Primary grade determination tables 25-7
- Wheat, Canada Western Experimental (CW EXPRMTL), standard of quality 25-7
- Wheat, Canada Western Experimental (CW EXPRMTL), foreign material 25-7
- Wheat, Canada Western Experimental (CW EXPRMTL), grading factors 25-8

Criteria for designation as experimental grades

Experimental grades for selected varieties of wheat have been established to allow Canadian agricultural entities to market test varieties that do not readily fit into the existing grade structure, but which show some promise for acceptability in world markets.

A variety is eligible to be assigned to the grades defined in the experimental grade schedules only if the variety is designated by the Canadian Grain Commission.

The criteria for a variety to be eligible for designation are

- There is evidence that Canadian producers will derive a benefit from its production either immediately or in the future.
- There is supportive data for its agronomic characteristics and end-use quality.
- The variety will be produced under contract to the sponsoring organization.
- The variety will remain in the program for a specified period.

When a variety is no longer eligible for the experimental grades, the sponsoring organization purchases and disposes of all existing stocks to prevent adulteration of registered varieties unless the Canadian Grain Commission establishes a grade schedule for that variety and any other varieties of that grain having similar qualities.

Wheat

Classes and varieties

A variety from any class of wheat may be approved for eligibility for experimental grades. The class of wheat is noted in the remarks on inspection records.

Samples containing admixtures of registered Canadian or foreign varieties in excess of 5.0% by weight are graded *Canada Western Feed*.

Cleaning

- Dockage is assessed using the procedures described in Chapter 4 of this Guide.
- All special cleaning described in Chapter 4 is applied to experimental grades, provided that the grade can be improved.

Feed or sample grades

Samples eligible for experimental grades but displaying grading factors other than stones that are above established tolerances are graded Canada Western Feed or Sample depending on the severity of the grading factors.

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary grade determination tables.

Representative portion for grading

All grading is done on representative portions divided down from the clean sample, using a Boerner-type divider.

The *optimum representative portion* is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

See wheat chapter for *Representative portions, grams*

Grading factors

Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

Extraneous material

Can be defined as glass, metal, wood, plastic or any other material not already defined in the Official Grain Grading Guide.

Procedures

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Wheat, Held IP Suspect Contaminated Grain* and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada.
Samples deemed to be contaminated are graded: *Wheat, Sample Condemned*.

Degermed (DGM)

Tolerances apply to kernels not classed as sprouted.

Extraneous material

See *Contaminated grain*

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedures

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Wheat, Held IP Suspect Contaminated Grain.* The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded: *Wheat, Sample Condemned.*

Grass green (GRASS GR)

Grass-green kernels are a distinct vivid green throughout because of immaturity.

Hard vitreous kernels (HVK)

Vitreousness is the natural translucent colouring that is a visible sign of kernel hardness. It is a factor for hard wheat varieties only. For a full description, see Chapter 4.

Insect damage (I DMG)

Consider the overall quality of the sample.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other nontoxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.

Note: Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement*.

- In western Canada samples of grain containing stones in excess of "basic grade" tolerances, up to 2.5% are graded *Wheat, Rejected "basic grade" Account Stones*. The "*basic grade*" refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determination tables) that would have been assigned to the sample if it contained no stones.
- In western and eastern Canada grain containing more than 2.5% stones is graded *Wheat, Sample Salvage.*

Examples: Western Canada

Excerpt from grade determination tables for
Wheat, Canada Western Experimental

Grade name	Stones %
No. 1 CW EXPRMTL	0.03
No. 2 CW EXPRMTL	0.03
No. 3 CW EXPRMTL	0.06
CW Feed	0.10

Basic grade:..... *Wheat, No. 3 Experimental*
Reason for basic grade:..... Mildew

If the above sample contained	Grade in Western Canada
0.08% stones	*Wheat, Rejected No. 3 CW Experimental Account Stones*
3.0% stones	*Wheat, Sample Salvage*

Test weight (TWT)

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre. For procedures, see Chapter 1 of this guide, *Test weight*.

Treated seed and other chemical substances

See Contaminated grain.

Primary grade determination tables

Wheat, Canada Western Experimental (CW EXPRMTL), standard of quality

Grading factor	No. 1 CW EXPRMTL	No. 2 CW EXPRMTL	No. 3 CW EXPRMTL	CW Feed	Grade, if specs for CW Feed not met
Degree of soundness	Reasonably well matured, reasonably free from damaged kernels	Fairly well matured, may be moderately bleached or frost-damaged, reasonably free from severely damaged kernels	May be frost-damaged, immature or weather-damaged, moderately free from severely damaged kernels	Reasonably sweet, excluded from other grades of wheat on account of damaged kernels	
Minimum test weight kg/hL (g/0.5 L)	75 (365)	72 (350)	69 (335)	65 (315)	Wheat, Sample CW Account Light Weight
Minimum hard vitreous kernels * %	65	No minimum	No minimum	No minimum	
Variety	Any wheat variety of the class Canada Western Experimental designated as such by Order of the Commission	Any wheat variety of the class Canada Western Experimental designated as such by Order of the Commission	Any wheat variety of the class Canada Western Experimental designated as such by Order of the Commission	Any class or variety of wheat excluding amber durum and CWSP	

(*) Minimum hard vitreous kernels is a factor for hard wheat varieties only

Wheat, Canada Western Experimental (CW EXPRMTL), foreign material

Grading factor	No. 1 CW EXPRMTL	No. 2 CW EXPRMTL	No. 3 CW EXPRMTL	CW Feed	Grade, if specs for CW Feed not met
Ergot %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Ergot
Excreta %	0.01	0.01	0.01	0.03	Wheat, Sample CW Account Excreta
Matter other than cereal grains %	0.2	0.3	0.5	1.0	Wheat, Sample CW Account Admixture
Sclerotinia %	0.04	0.04	0.04	0.10	Wheat, Sample CW Account Admixture
Stones %	0.03	0.03	0.06	0.10	2.5% or less - Wheat, Rejected grade, Account Stones Over 2.5% - Wheat, Sample Salvage
Total % Foreign material	0.6	1.2	2.4	10.0	See Mixed grain

Wheat, Canada Western Experimental (CW EXPRMTL), grading factors

Grading factor	No. 1 CW EXPRMTL	No. 2 CW EXPRMTL	No. 3 CW EXPRMTL	CW Feed	Grade, if specs for CW Feed not met
Artificial stain, no residue %	0.0	0.1	0.1	2.0	Wheat, Sample CW Account Stained Kernels
Binburnt, severely mildewed, rotted, mouldy %	0.01	0.02	0.03	2.50	Wheat, Sample CW Account Heated
Total % Heated, binburnt, severely mildewed rotted, mouldy	0.1	0.4	1.0	2.5	Wheat, Sample CW Account Heated
Contrasting classes %	0.5	1.5	2.5	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10% amber durum - Wheat, Sample CW Account Admixture
Total % Wheats of other classes or varieties and contrasting classes	1.5	3.0	5.0	10%, either alone or in combination with each other, of amber durum and any variety of the class CWSP	Over 10% amber durum - Wheat, Sample CW Account Admixture
Dark immature %	1	3	10	No limit	
Degermed %	4	7	13	No limit	
Fireburnt %	0.0	0.0	0.0	2.0	Wheat, Sample CW Account Fireburnt
Fusarium damage %	0.3	1.0	2.0	5.0	Over 5.0% - Wheat, Sample CW Account Fusarium Damage Over 10% - Wheat, Commercial Salvage
Grass green %	0.8	2.0	10.0	No limit	
Grasshopper, army worm %	1	3	8	No limit	
Natural stain %	1	2	5	No limit	
Pink %	2	5	10	No limit	
Sawfly, midge %	2	5	10	No limit	
Shrunken %	4	4	4	No limit	
Broken %	5	6	7	13	Sample Broken Grain
Total % Shrunken and broken	7	8	9	No limit within broken tolerances	
Smudge %	0.3	1.0	5.0	No limit	
Total % Smudge and blackpoint	10	20	35	No limit	
Severely sprouted %	0.1	1.5	5.0	No limit	
Total % Sprouted	0.5	1.5	5.0	No limit	

26. Sample feed grain

Determination of dockage

Samples are graded using procedures for sample feed grain when they exceed the Broken tolerances for Mixed Grain.

▲ **Important:** When a sample is to be graded as sample feed grain,

1. Return dockage to the cleaned sample.
2. Begin cleaning and dockage assessment using the procedures described in this section.

Dockage is assessed and recorded to the nearest 0.1% on all samples.

Normal cleaning procedures

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples should be at least 1000 grams.
   - Unofficial samples must be at least 1000 grams.
2. Sieve the sample over the No. 4.5 round-hole hand sieve, using approximately 250 g at a time.

Composition of dockage

Dockage contains

- Material that passes through the No. 4.5 round-hole sieve
- Material removed by special cleaning for grade improvement

Rounding rules

Rounding rules are outlined in schedule 3 of the Canada Grain Regulations. When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed.

1. After the cleaning assessment has been completed, use a No. 6 or a No. 5 buckwheat hand sieve to remove large seeds. Large seeds are removed if their total weight exceeds 3% of the cleaned sample by weight.
2. Record the additional cleaning and dockage on inspection record.

Primary and export grade determination tables

Sample feed grain, foreign material

Grading factor	Sample feed grain	Grade if specs for Sample feed grain not met
Ergot %	0.33	*Sample Feed Grain, Ergoty*
Excreta %	0.03	*Sample (with components named)*
Flaxseed %	5	*Sample (with components named)*
Fusarium %	4	*Sample (with components named)*
Wheat heads %	10	*Sample (with components named)*
Knuckles and straw %	4	*Sample (with components named)*
Large weed seeds %	3	*Sample (with components named if not removable with approved sieves)*
Total % Large material	10	*Sample (with components named*
Sclerotinia %	0.25	*Sample Feed Grain, Sclerotinia*
Soft earth pellets %	0.33	*Sample, Feed Grain, Soft Earth Pellets*
Stones %	0.1	2.5% or less - *Sample Feed Grain, Stones* Over 2.5% - *Sample Feed Grain, Sample Salvage*
Wild oats %	49	*Mixed Feed Oats*
Total % Large material and wild oats	50	*Sample (with components named)*

Large weed seeds includes other grains such as peas, corn, domestic buckwheat, etc.
Samples containing over 3.0% by weight are graded *Sample* and the components are named.
Soft earth pellets are included in total of large seeds.

Sample feed grain, damage

Grading factor	Sample feed grain	Grade if specs for Sample feed grain not met
Broken grain %	50	*Sample Broken Grain (class on request)*
Fireburnt %	2	*Sample Feed Grain, Fireburnt*
Heated %	5	*Sample Feed Grain, Heated*

27. Standard abbreviations

The following standard abbreviations are used in inspection reports, official records and certificates.

A

account ..... AC
adhered hulls ..... ADHULLS
adhered soil ..... ADHS
admixture ..... ADMX
aflatoxin ..... AFL
amber durum ..... AD
approximately ..... APPROX
artificial stain ..... ART STND
aspiration ..... ASP
aspiration, roughage and broken ..... ASPRHGEBKN
attrition ..... ATT
Avery bushel ..... A bu
azuki (adzuki) ..... AZU

B

barley ..... BLY
barley of other classes ..... BOOC
barley of other types ..... BOOT
beans ..... BEN
binburnt ..... BBT
binburnt, severely mildewed, rotted, mouldy ..... BBTSEVMILROTMLDY
black ..... BLK
black hilum ..... BHIL
black turtle ..... BKT
blackeye ..... BKE
blackpoint ..... BLK PT
bleached ..... BLCH
blue-eye mould ..... BEM
bran pellets ..... BRAN PLTS
broken ..... BKN
broken after cleaning ..... BKNACL
broken and shrunken ..... BKN&SHR
broken deducted ..... BKN DED
broken grain ..... BKN GRN
broken left ..... BKN LEFT
broken or shrunken ..... BKN OR SHR
brown ..... BRN
brown hilum ..... BRNHIL
buckwheat ..... BWT

C

Canada	CAN
Canada Eastern	CE
Canada Northern Hard Red	CNHR
Canada Prairie Spring	CPS
Canada Prairie Spring Red	CPSR
Canada Prairie Spring White	CPSW
Canada Western	CW
Canada Western Amber Durum	CWAD
Canada Western Extra Strong	CWES
Canada Western Red Spring	CWRS
Canada Western Red Winter	CWRW
canary seed	CNY SD
canola	CNL
canola and mustard seed	CNL & MUS
canola / mustard seed	CNL/MUS
canola meal	CNL MEAL
centimetre	cm
cereal grain	C GRN
chaff	CHF
chaff and dust	CHF & DUST
chickpeas	CHKPEA
chlorophyll	CHLL
clean	CLN
clover	CLV
cockle	COC
cockle other classes	COC OCL
colour, colours	CLR
commercially clean	CCLN
composite	COMP
condemned	CNDM
confectionery	CONF
conspicuous admixture	CADMX
container	CONT
contaminated	CONTAM
contrasting classes	CON CL
contrasting colours	CON CLR
copper	COP
corn	CRN
cow cockle	CCOC
cracked	CRKD
cracked corn	CC
cracked corn and foreign material	CCFM
cracked seed coat	CSDC
cracked seed coats including splits	CSDC&SPLTS
cranberry	CBY

D

damage ..... DMG
damaged ..... DMGD
damage, foreign material and contrasting classes ..... DMGFMCONCL
damp ..... DP
damp extra ..... DP EX
damp sample ..... DP SPLE
damp sample Canada ..... DP SPLE CAN
dark green speckled ..... DGS
dark immature ..... DKIM
dark hilum ..... DHIL
dark red kidney ..... DRK
deducted ..... DED
degermed ..... DGM
dehulled ..... DHULL
dehulled seed ..... DHULL SD
dehydrated ..... DEH
destination ..... DEST
destroyed ..... DST
different ..... DIFF
different classes combined ..... DCC
different grades combined ..... DGC
discoloured ..... DCLR
distinctly detrimental ..... DDET
distinctly green ..... DGR
dockage ..... DKG
dockage excreta ..... DKG EXCR
domestic ..... DOM
domestic mustard seed ..... DMS
domestic seeds and green and tfm ..... DSDSGRNTFM
downy mildew ..... DWNY MIL
dutch brown ..... DBR

E

earth pellets ..... EP
eastern ..... E
elevator ..... ELEV
empty, clean and dry ..... ECD
ergot ..... ERG
ergoty ..... ERGY
excreta ..... EXCR
experimental ..... EXPRMTL
export ready ..... ER
extra ..... EX
extra strong ..... ES

F

Faba beans ..... FBN

fair colour ..... FCLR
fairly good colour ..... FGCLR
fairly sound ..... FSND
fairly sweet ..... FST
feed ..... FD
falling number ..... FN
fertilizer ..... FERT
fertilizer pellets ..... FERT PLTS
final quality determination ..... FQD
fireburnt ..... FBNT
flaxseed ..... FLX
flax pellets ..... FLX PLTS
fm is excluded as a grading factor ..... FMXGF
food ..... FOOD
foreign material ..... FM
foreign material excluding cereal ..... FMXCGRN
foreign material excluding cereal grains and wild oats ..... FMXCGRNWO
foreign material excluding grain ..... FMXGRN
foreign material excluding other grains ..... FMXOG
foreign material excluding other cereal grains ..... FMXOCG
frost ..... FR
frost light ..... FR LT
frost severe ..... FR SEV
frost total ..... FR TOT
fusarium damage ..... FUS DMG

G

general purpose ..... GP
germination ..... GERM
glabrous ..... GLB
good natural colour ..... GNCLR
grade ..... GRD
grading factor ..... GRD FAC
grade improvement ..... GRDIMP
grain ..... GRN
gram ..... g
grass green ..... GRASS GR
grasshopper parts ..... GPT
grey hilum ..... GHIL
great northern ..... GTN
green ..... GR
green peas ..... GR PEA
guaranteed ..... G

H

hail damage ..... H DMG
handpick ..... HP
handpick coarse material ..... HP CURSMTL

handpick earth pellets ..... HP EP
handpick foreign material ..... HP FM
handpick hulled seed ..... HP HULL SD
handpick inseparable material ..... HP INSPMTL
handpick other grain ..... HP OG
handpick roughage ..... HP RHGE
handpick vegetable matter ..... HP VM
hard red spring ..... HRS
hard red winter ..... HRW
hard vitreous kernels ..... HVK
hard white spring ..... HWS
hard white winter ..... HWW
heated ..... HTD
heat stress ..... HTS
head rot ..... HEAD ROT
heated binburnt ..... HTD BBT
heavy ..... HVY
hectolitre ..... hL
hp coarse material ..... HPCURSMTL
hulled/hulless ..... HULL
hulled and broken ..... HULLBKN
hulls ..... HULLS

I

identity preserved ..... IP
immature ..... IM
inconspicuous admixture ..... INC ADMX
inert material ..... INERT MTL
inferior variety ..... INF VAR
injurious seeds ..... INJ SDS
insect damage ..... I DMG
insect excreta ..... I EXCR
insect parts ..... I PARTS
inseparable admixture ..... INSEP ADMX
inseparable seeds ..... INSEP SDS

K

kernels ..... KRNL
kilograms ..... kg
kilograms per hectolitre ..... kg/hL
knuckles ..... KNKLS
knuckles and straw ..... KNKL&STR
knuckles, straw and chaff ..... KNKLSSTRCHF

L

lady’s thumb ..... LTHMB
large ..... LGE
large seeds ..... LSDS

large seeds and broken grain ..... LSDS & BKN GRN
large seeds and chaff ..... LSDS&CHF
large seeds and small seeds ..... LSDS&SSDS
large seeds left in ..... LSDS LEFT
large seeds other than wild buckwheat ..... LSDS XW BWT
lb/bu Avery ..... Lb/bu-A
lb/bu Winchester ..... Lb/bu-W
lentils ..... LNT
light ..... LT
light red kidney ..... LRK
lightweight ..... LTWT
litre L

M

malt barley ..... MALT BLY
malt pellets ..... MALT PLTS
maple ..... MAP
material ..... MTL
material other than splits ..... MOTSPLTS
matter other than cereal grains ..... MOTCG
mechanical damage including splits ..... MDMGINCSPLTS
midge ..... MDGE
mildew ..... MIL
mildewed kernels ..... MIL KRNL
millilitre ..... mL
millimetre ..... mm
millet ..... MLT
mineral matter ..... MIN MAT
mineral matter including stones ..... MINMATINCSTNS
mixed ..... MXD
mixed classes ..... MXD CL
mixed colours ..... MXD CLR
mixed grain ..... MXG
mixed types ..... MXD TYP
mixed varieties ..... MXD VAR
moderate weathering ..... MWEATH
moist ..... MT
moist sample ..... MT SPLE
moisture test ..... MST
mouldy ..... MLDY
mouldy kernels ..... MLDY KRNL
mustard seed ..... MUS
musty ..... MUSTY

N

natural stain ..... NSTN
net dockage ..... NET DKG
non-registered variety ..... NON REGV

not commercially clean ..... NCC
not of good natural colour ..... NGNCLR
not officially inspected ..... NOFFINSP
not ready for export ..... NRE
not reasonably good colour ..... NREASGCLR
not reasonably sweet ..... NREASST
not uniform in size ..... NUS
number ..... NO
numbers ..... NOS

O

oats ..... OAT
oat pellets ..... OAT PLTS
objectionable ..... OBJ
objectionable odour ..... OBJ ODOR
ochratoxin ..... OTA
odour ..... ODOR
off-colour ..... OFFCLR
oil ..... OIL
orange ..... OR
oriental ..... ORIENT
other ..... OTHER
other cereal grains ..... OCG
other cereal grains and other matter ..... OCGOM
other cereal grains excluding wheat ..... OCGXWHT
other cereal grains excluding wheat and barley ..... OCGXWHT&BLY
other classes ..... OCL
other classes of beans that blend ..... OCLBB
other classes of flax ..... OCLFLX
other classes that blend ..... OCL BL
other colours ..... OCLR
other conspicuous admixture ..... OCA
other damaged ..... ODMG
other distinctly detrimental seeds ..... ODDET
other foreign material ..... OFM
other grain ..... OG
other grain not wheat ..... OGXWHT
other grains ..... OGS
other hulless variety ..... OHLSVAR
other inseparable admixture ..... OINSEPADMIX
other large seeds ..... OLSDS
other matter ..... OM
other pulses ..... OPLSE
other than ..... OT
other varieties ..... OVAR
out of ..... EX

P

partition ..... PART
peabean ..... PBN
peas ..... PEA
peas of other colours ..... POOCLR
peeled ..... PLD
peeled and broken ..... PLD BKN
peeled, split and broken ..... PLDSPLTBKN
pelleted ..... PLTD
pelleted screenings ..... PLTD SCG
pellets ..... PLTS
penetrated ..... PENT
penetrated smudge ..... PENT SM
perforated ..... PERF
perforation damage ..... PERF DMG
Phyto Certificate issued ..... PHY
pink ..... PNK
pink kernels ..... PNK KRNL
pinto ..... PNT
plump ..... PLMP
poor colour ..... PCLR
prairie ..... PRIE
probe ..... P
protein ..... PROT
pulses other than green, yellow or orange peas ..... PULSESOTGRYELORORGPEA
pure ..... PURE

Q

quality ..... QUAL

R

ragweed ..... RAG WD
rapeseed ..... RPE
rapid visco analysis ..... RVA
reasonably good colour ..... RGCLR
reasonably good natural colour ..... RGNCLR
reasonably sound ..... REASSND
red ..... R
red spring ..... RS
red winter ..... RW
registered ..... REG
rejected ..... REJ
riddle ..... RDLE
rotted ..... ROT
rotted kernels ..... ROT KRNL
roughage ..... RHGE
roughage and aspiration ..... RHGE&ASP
roughage and hulls ..... RHGE&HULL

roughage including riddle ..... RGHEINCLRDLE
roughage, large seeds and broken ..... RHGELSDSBKN
rough awn ..... RAWN
round-hole ..... RH
ruptured ..... RUP
rye ..... RYE
rye pellets ..... RYE PLTS

S

safflower ..... SAF
safflower seed ..... SAFF SD
salvage ..... SLVG
sample ..... SPLE
sample Canada ..... SPLE CAN
sample feed grain ..... SFG
sample spilt ..... SPLE SPILT
sample too small ..... STS
sawfly ..... SFLY
scab damage ..... SCAB DMG
Sclerotinia sclerotiorum ..... SCL
screenings ..... SCG
seed ..... SD
seed coats ..... SDC
seeds ..... SDS
seeds and destroyed ..... SDS&DST
select ..... SEL
separation ..... SEPN
severe midge damage ..... SEVMDGE
severely damaged ..... SEVDMG
severely mildewed ..... SEVMIL
severely sprouted ..... SEVSPTD
shale ..... SHALE
shrivelled ..... SHV
shrunken ..... SHR
sieve ..... SVE
sieves ..... SIEVES
six-row ..... 6 ROW
slightly stained ..... SSTND
slotted ..... SLTD
slotted sieve ..... SLTD SVE
slotted sieve #5.5 ..... SL5.5
small ..... SML
small broken ..... SBKN
small red ..... SRD
small seeds ..... SSDS
small seeds and dust ..... SSDS&DUST
small seeds, chaff and dust ..... SSDSCHF&DUST
smooth awn ..... SAWN
smudge ..... SM

smudge including blackpoint ..... SMINCBLKPT
smudge total ..... TOT SM
smut ..... SMUT
smutty ..... SMTY
soft earth pellets ..... SEP
soft red winter ..... SRW
soft white ..... SW
soft white spring ..... SWS
sorghum ..... SRG
sound ..... SND
sound whole green peas ..... SNDWHGRPEA
sound whole yellow peas ..... SNDWHYELPEA
soybeans ..... SYB
soybeans of other colours ..... SOOCLR
special ..... SPEC
special bin ..... SPEC BIN
special cleaning ..... SCLN
special machine separation ..... SMS
special select ..... SPECSEL
split ..... SPLT
split green peas ..... SPLTGRPEA
split yellow pea ..... SPLTYELPEA
splits ..... SPLTS
splits, damage, foreign material and contrasting classes ..... SPDMGFMCC
splits in dockage ..... SPLTSDKG
spring ..... SPG
sprouted ..... SPTD
stained ..... STND
stained kernels ..... STND KRNL
standard ..... STD
starchy ..... STCH
stones ..... STNS
straw ..... STRAW
strong ..... STG
submitted ..... S
sunflower ..... SUN
sunflower seed ..... SUN SD
superficial discolouration ..... SUPDISCLR

T

Tartarian buckwheat ..... TART BWT
test weight ..... TWT
thin ..... THIN
tombstone ..... TOMBST
tonne ..... t
total ..... TOT
total adhered hulls ..... TOTADHHL
total attrition and seeds ..... TATT&SDDS
total broken ..... TBKN

total bleached including copper…….…… TBLCHINCCOP
total cockle and sclerotia..... TCOCSCL
total cockle and sclerotinia..... TCOCSCL
total conspicuous admixture ..... TCA
total cracked seed coats including splits ..... TCSDCISPLT
total damage ..... TDMG
total damage and foreign material..... TDMG&FM
total damage, foreign material, contrasting classes..... TDMGFMCON
total damage including wrinkled..... TDMGINCWRKL
total damage, splits, foreign material and contrasting classes ..... TDMGSPFMCN
total distinctly detrimental ..... TDD
total dockage ..... TOT DKGE
total foreign material..... TFM
total foreign material including dockage ..... TFMINCDKG
total foreign material including other cereal grains ..... TFMINCOCG
total foreign material including sclerotia ..... TFMINCSCL
total including contrasting classes..... TINCCONCL
total including damage, foreign material and contrasting classes..... TINCDMGFMCONCL
total including inseparable seeds..... TINCINSEPSDS
total including non-registered varieties..... TINCNONREGVAR
total including splits, damage, foreign material and contrasting classes ..... TINCSPLTSDMGFMCONCL
total inseparable seeds..... TINSEPSDS
total large seeds and wild oats..... TLSD&WO
total other cereal grain ..... TOCG
total other classes and bleached ..... TOCLBLCH
total other oilseeds and inseparable seeds..... TOOSDSINSEPSDS
total removable material ..... TRMAT
total roughage..... TOT RHGE
total small seeds, large seeds, wild oats, roughage, broken grain……TSDLSWORB
total seeds and aspiration ..... TSDS&ASP
total seeds and attrition ..... TSDS&ATT
total seeds and roughage ..... TSDS&RHGE
total seeds and wild oats ..... TSDS&WO
total seeds roughage and attrition..... TSDSR&A
total shrunken and broken ..... TSHRBKN
total small seeds and roughage..... TSSDS&RHGE
total small seeds, attrition, dust and chaff ..... TSSDSATTDUSTCHF
total small seeds, chaff, dust and hulls..... TSSDSCHFDUST&HULLS
total small seeds, roughage and attrition ..... TSSDSR&A
total smudge ..... TOT SM
total smudge and blackpoint ..... TSMBLKPT
total splits and damage ..... TSPLT DMG
total sprouted..... TSPTD
total wheat heads knuckles straw and chaff ..... TWHDKNSTCF
total wheat of other classes ..... TWOOC
tough ..... TF
tough sample ..... TF SPLE
tough sample Canada ..... TF SPLE CAN
trace..... TR

triticale ..... TCL
truck ..... TRCK
two-row ..... 2 ROW

U

United States of America ..... USA
utility ..... U

V

varietal purity not guaranteed ..... VPNG
variety ..... VAR
varieties with adhered hulls ..... VARADHHLS
vegetable matter ..... VM
very immature seeds ..... VIM SDS
vomitoxin ..... DON

W

weathered ..... WEATH
weed seeds in handpick ..... WDSDS HP
weight ..... WGT
western ..... W
wet ..... WT
wet sample ..... WT SPLE
wheat ..... WHT
wheat class declared by shipper ..... WCD
wheat heads ..... WHT HDS
wheat of other classes ..... WOOC
white ..... WTE
white cap ..... WCAP
white hilum ..... WHIL
white hilum grain ..... WHIL GRN
white kidney ..... WKD
white winter ..... WW
whole grain ..... WHOLE GRN
whole green pea ..... WHOLE GRPEA
whole yellow pea ..... WHOLE YELPEA
wild buckwheat ..... W BWT
wild mustard ..... WM
wild mustard and canola/rapeseed ..... WM&CNL/RPE
wild mustard and rapeseed ..... WMRPE
wild oats ..... WO
Winchester bushel ..... W bu
winter ..... WIN
wrinkled ..... WRKL

Y

yellow ..... YEL

yelloweye ..... YLE
yellow-seeded flax ..... YELSDFLX

Z

zearalenone ..... ZER

28. Glossary

This section describes grading factors, procedures and common terms used in grading Canadian grain.

AAFC

Agriculture and Agri-Food Canada, the federal department of agriculture.

aeration

Aeration is the process of passing air currents through a grain stream. This process is used to preserve grain quality by reducing its temperature or moisture content.

ascochyta blight

Ascochyta blight is a fungal disease that attacks the leaflets, stems, petioles, pods, and seeds of lentil. Heavily infected seeds usually are characterized by a half-moon shaped, light to reddish or reddish brown spot on the edge of the seed. Occasionally it appears as a brown spot on the cheek of the seed.

Ascochyta blight was first reported in Canada in 1978 and has subsequently become a serious problem. It causes yield losses and severe seed discolouration in epidemic years.

attritional material

Attritional material is material other than small seeds and whole or broken grain passing through the No. 4.5 round-hole sieve.

automatic mechanical sampler

An automatic mechanical sampler is a device which extracts a small representative portion from the grain flow at regular intervals.

Berlese funnel

Berlese funnels are cone-shaped devices with a screen on the bottom used as part of the process for identifying infested grain. Grain suspected of being infested is placed in the funnel. The funnels are placed on a receptacle under lights. Insects move away from the heat of the lights down the funnel and are collected in the receptacles for identification.

binburnt kernels

Binburnt kernels are caused by gradual heating in storage and have not been exposed to temperatures approaching ignition. In a cross section, the binburnt kernel maintains its dense structure and appears smooth and glossy. The weight of a binburnt kernel is similar to that of a sound kernel of comparable size.
Binburnt kernels closely resemble fireburnt kernels in colour, however, a fireburnt kernel looks like charcoal in cross-section, has numerous air holes, and crumbles easily under pressure.

See *Fireburnt kernels*

blackpoint

Blackpoint is a discolouration on the germ end of kernels of grain caused by numerous species of fungi and bacteria. Blackpoint is found in barley, triticale and wheat, although there is no separate tolerance defined for blackpoint in barley.

Kernels are susceptible during periods of rainfall or humidity above 90%, particularly during filling or maturation.

Blackpoint does not usually reduce yields, but it can reduce grade and quality. Blackpoint is especially troublesome on durum wheat because black specks can appear in the semolina.

bleached

Bleaching is an indication of exposure to wet conditions at or near maturity. Bleaching is caused by alternate wetting and drying of grain which causes tiny fissures to develop throughout the kernels. The fissures are caused because the grain swells a little when it is wet and doesn't dry back to the same size.

Boerner-type divider

A Boerner-type divider is a gravity-operated dividing apparatus that separates a grain sample into two smaller equal portions. The sample is placed in the upper hopper and released by opening the valve in the hopper throat. The sample flows downward and is evenly dispersed over a cone with evenly spaced separations. The divided sample is then directed into two grain streams, which empty into two collecting pans at the bottom.

boll membrane

Boll membrane is the lining of the seed pod, or boll, that can at times be adhered to the seed.

brake end

The brake end is the end of a railway car where the hand brake wheel is located. Compartments or partitions in a railcar are numbered sequentially beginning at the brake end.

Brassica carinata

Commonly known as ethiopian mustard, *Brassica carinata* is a small oilseed that is similar in size and shape to canola and domestic mustard seed. Varieties range in colour from brown to yellow and have high erucic acid content similar to mustard seed or rapeseed. *Brassica carinata* may not be readily distinguishable from other small oilseeds without the use of a microscope.

bunt

Bunt is characterized by the presence of bunt balls or black spores. Infected grain may have a fishy odour. Common bunt is a wheat disease caused by two closely related fungi, *Tilletia caries* and *Tilletia foetida*. The disease is also called stinking or covered smut. In infected plants, kernels on headed plants are replaced with bunt balls containing black powdery spores of the fungus.

Bunt reduces yield of infected crops, and it reduces the value of the crop, even in mildly infected crops. It is not as common as it once was in Canada, because we have developed effective control measures and new cultivars that are resistant to the disease.

Canada Eastern, Canada Western, Canada

These three terms form part of the grade name; for example, Canada Eastern Red Spring wheat, or Canada Western oats. The terms refer to the geographic area (eastern or western Canada) of delivery as defined in the *Canada Grain Act*, or to Canada generally.

Canada Grain Act

The *Canada Grain Act* is the statutory authority empowering the CGC to regulate grain handling in Canada and to establish and maintain quality standards for Canadian grain. It was first passed in 1912. The text of the Act can be found at https://laws-lois.justice.gc.ca/eng/acts/g-10/index.html

Canada Grain Regulations

The Regulations are established by Section 116 of the *Canada Grain Act*. They govern grain-handling procedures and define grades for grain grown in eastern and western Canada. The text of the Regulations can be found at https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._889/

canola

The term “canola” was trademarked in 1978 by the Western Canadian Oilseed Crushers’ Association to differentiate low-erucic acid and low-glucosinolate varieties and their products from rapeseed varieties.

cargo sample

A cargo sample is a composite of incremental samples taken as a cargo is loaded into a ship for export. Cargo samples are inspected and graded, and portions of them are sent to the Grain Research Laboratory for analysis.

caryopsis

The caryopsis is the kernel of cereal grains and grasses with the hull removed.

See *groats*.

cash purchase ticket

A cash purchase ticket is a ticket issued indicating the grade, weight, price and amount payable to the owner of the grain for each delivery of grain to a primary elevator, process elevator or grain dealer. The ticket is a negotiable instrument and can be cashed at any chartered bank or credit union. It is defined in the *Canada Grain Act*.

cereal grains

Cereal grains are wheat, rye, barley, oats, triticale and canary seed.

Certificate Final

The Certificate Final is issued by the CGC for each cargo of export grain. The Certificate Final stipulates the grade and weight of the grain loaded on a vessel.

chitting

Chitting, or pre-germination, is the premature sprouting of grain before harvest. Pre-germination can occur when mature barley is still in the field during prolonged wet weather before harvest.

Malt barley is passed through the barley pearler and the germ is assessed to determine the pre-germination of the sample (chitted barley). This procedure is used by the malt barley industry and is not part of the official grading system.

chlorophyll

Chlorophyll is a green pigment found in all green plants that is essential for photosynthesis. In canola, the seeds lose their chlorophyll as they ripen, however, the seeds do not ripen all at once therefore when harvested some seeds still contain chlorophyll. Immature canola seeds can contain very high levels of chlorophyll.

class

Classes are defined under the *Canada Grain Act*. Class, in respect of grain, means any variety or varieties of grain designated by order of the CGC as a class.

coarse vegetable matter

Coarse vegetable matter is plant-based material handpicked from the sample such as pods, stems, straw, thistle tops and wheat heads, but not domestic or wild seeds.

commercially clean

Commercially clean shipments are shipments of grain whose dockage components fall within allowed limits and is of a type normally present after standard commercial cleaning.

Commission

The Canadian Grain Commission may be referred to as the commission or the CGC. The Chief Commissioner of the CGC reports directly to the Minister of Agriculture.

Commission Order

A Commission order is a directive of the CGC consistent with Section 118 of the *Canada Grain Act*. An order remains in effect only until the end of the crop year in which it is issued, at which point it may be renewed. Orders can be viewed from the CGC web site at https://grainscanada.gc.ca/en/industry/orders

composite sample

A composite sample is composed of a number of distinct portions, each obtained in a prescribed manner from primary samples. The portions are blended to make the composite.

contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

(a) adulterated for the purposes of the *Food and Drugs Act*; or

(b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded *"Type of Grain,* Sample Condemned.

Paragraph 76. (1) of the *Canada Grain Act* specifies that operators of licensed terminal elevator must inform the CGC if they find grain to be infested or contaminated, or to have gone or to be likely to go out of condition or otherwise to require treatment. The CGC may inspect the grain.

The CGC tells the operator how to treat or dispose of the grain. If the grain has been special binned, the elevator operator may recover the costs of treating or disposing of the grain from the owner of the grain.

Paragraph 90. (1) says that a CGC inspector who believes on reasonable grounds that grain is contaminated may seize any evidence necessary to support their suspicion. Paragraph 104 says that an operator of a licensed elevator must not knowingly receive or discharge any grain, grain product or screenings that is infested or contaminated or that may reasonably be regarded as being infested or contaminated

cool and sweet

Cool and sweet are terms used to describe the condition of grain which is of a normal temperature and is free from any objectionable odour.

cotyledon

The portion of an oilseed or pulse crop seed that is beneath the seed coat or hull. Grading factors may be assessed based upon an examination of the cotyledon surface or a cross-section of the seed.

Cox funnel

A Cox funnel is a cone-shaped device used in determining test weight in conjunction with the 0.5-litre measure to control the flow of grain into the measure.

See Chapter 1, *Test weight*

crop year

The crop year is from July 1 to June 30 of the following year in Eastern Canada and August 1 to July 31 of the following year in Western Canada, as defined in the *Canada Grain Act*. The Governor in Council may, by order, vary the period of a crop year to another period of not less than three hundred and sixty-five days.

damp

A sample of grain is identified as damp if the moisture content exceeds the *tough* range defined for that class of grain.

See Chapter 2, *Moisture testing*

dehulled

Occasionally used for *hulled*.

direct hit shipment

Direct hit shipments are those shipments where Canadian grains, oilseeds and/or pulses are transferred from trucks and/or railcars directly to a vessel without added processing.

direct export

A direct export is an export movement from a primary or terminal elevator. The grain being loaded will be exported from the country.

dockage

According to the *Canada Grain Act*, dockage is material that must be removed from grain by the use of approved cleaning equipment so that the grain can be assigned a grade. Once it has been removed from the grain, dockage is called *screenings*.

To report the percentage by weight of dockage in a sample,

For . . .	dockage is . . .
grain that is not commercially clean	reported in increments of 0.1%
eastern grains	assessed to the nearest 0.1%
export shipments authorized by the CGC to contain dockage	reported to the nearest 0.1%
grain graded *Sample Salvage, Sample Canada/CW/CE Account Fireburnt, Sample Condemned*	not reported
samples of official carlot or trucklot shipments containing dockage within established export limits for commercial cleanliness; for example, domestic buckwheat, 2.5%	what is normally present after ordinary commercial cleaning—there is no minimum canola, 2.5%, or dockage
off-grades	dockage is covered in the section describing the specific class of grain

Allowances are made for finely broken seeds in shipments not for direct export.

Eastern and western grain, mixed

Mixtures of eastern and western grain, except for corn, are graded *[class of grain] Sample Eastern and Western Mixed*. When the composition of the samples is known or can be established by analysis, it is recorded on the inspection certificate.

Separate lots of western corn may be loaded to vessels without separation at the request of shippers.

ergot

Ergot is a fungal disease which occurs on cereals and grasses. It is most prevalent on rye, triticale, wheat, and barley, in decreasing order of occurrence. It is rarely found on oats. The disease produces hard dense fungus bodies, called *sclerotia*, having a purplish black exterior, a purplish white to off-white interior, and a relatively smooth surface texture.

export ready

Export ready refers to carlots of wheat which meet the following criteria:

1. The lot must meet the commercially clean specifications for the grade
2. Wheat of other classes and contrasting classes must meet the export specifications for the grade
3. Total foreign material must meet the export specification for the grade.

Carlots, which are commercially clean but do not meet the export specifications for either wheat of other classes or total foreign material, will be designated as “Not Ready for Export”.

fair average quality (FAQ)

FAQ is a term used in grain marketing in some countries to describe the current year's grain quality on the basis of an average sample. The FAQ is a class of grain which is said to represent the quality of a commodity produced in a given year. FAQ standards of quality may change from year to year.

falling number

The falling number is a measure of alpha-amylase enzyme activity as a result of sprouting. It is a measure of how many seconds it takes for a plunger to sink through a slurry made of ground grain and water.

The test works on the principle that the presence of alpha-amylase causes the gelatinized starch to be reduced to sugars, with a loss of viscosity. The loss in viscosity results in a lower falling number. Grain which is sound and has low levels of alpha-amylase will have a high falling number, for example, over 300 seconds. Samples of grain with higher amounts of alpha-amylase will have a lower falling number.

fireburnt kernels

Fireburnt kernels are kernels burned or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal, with numerous air holes. These air holes result in a low-weight kernel which crumbles easily under pressure.

The Off-Grades of Grades of Grain and Grades of Screenings Order excludes from any Class I or Class II grade any grain having a fireburnt odour or containing fireburnt kernels in excess of established tolerances, because it is not possible to separate all kernels affected by smoke or heat from samples containing grain damaged by fire.

foreign material

Foreign material is material other than grain of the same class that remains in the sample after the removal of dockage. Some examples of foreign materials found in grain samples are:

- Cereal grains, sometimes called other cereal grains
- Earth pellets, soft
- Ergot
- Fertilizer pellets, hard
- Large seeds
- Matter other than cereal grains
- Roughage
- Sclerotinia
- Small seeds
- Stones

Many of the materials, such as stones, ergot, and sclerotinia have separate tolerances. Foreign material reduces the value—there is less desired grain for the weight or volume purchased. In addition, the presence of foreign material in grain compromises our reputation for clean grain.

Even the presence of other cereal grains can compromise the quality of the predominant grain. For example, the presence of barley in wheat reduces milling yield. Oats in red spring wheat reduces milling yield and gives the flour a duller colour.

Foreign material is defined for each grain under Grading Factors in its corresponding chapter in the Official Grain Grading Guide.

free fatty acids

Free fatty acids are components that reduce the smoke point in frying fats and oils. They oxidize rapidly, giving rancid flavours. High levels of free fatty acids in seeds is a sign of seed degradation.

The free fatty acids test gives a direct measure of the processing qualities of the oil and the amount of lye required to refine oils. Top canola seed usually has less than 0.7% free fatty acids.

glucosinolates

Glucosinolates are natural components of canola, rapeseed, and mustard seed. These compounds are responsible for the pungent odour and sharp flavour of cabbage, brussels sprouts, radishes, broccoli and cauliflower. They are natural toxicants, associated with goitre and liver damage when consumed in large quantities.

Glucosinolates are desirable in mustard seed destined for condiment use. However, high levels in rapeseed restricted the use of this seed for feed. Breeding programs to reduce the level of glucosinolates in rapeseed produced canola.

grade code

A grade code is a five-digit code used throughout the grain industry to identify each grade of each class of grain.

See also *grain code*.

grades of grain

Grades of grain are defined by specifications in

- The Canada Grain Regulations, schedule 3
- The Official Grain Grading Guide
- Orders of the Canadian Grain Commission

Class	Authority	Example
I	Canada Grain Regulations	*Wheat, No. 1 Canada Western Red Spring*
II (special grades)	Canada Grain Regulations Orders of the Canadian Grain Commission	experimental grades Brassica Juncea Canola, Canada
III (off-grades)	Off-Grades of Grain and Grades of Screenings Order	tough, damp, rejected and sample grades
IV (screenings)	Off-Grades of Grain and Grades of Screenings Order	*Screenings, No. 1 Feed*

grading factor

A grading factor is a physical condition of grain, the result of growing conditions, handling procedures or storage practices. It is a visual characteristic that indicates a reduction in quality; for example, frost damage, sprouted kernels, or heated kernels. Only relevant grading factors are shown as reasons for a grade.

> If a sample of wheat grades No. 3 for one particular reason, there is no need to list other factors that might be acceptable in a higher grade.

grain

A grain is any seed named in the *Canada Grain Act* or designated by the Canada Grain Regulations as a grain.

grain code

A grain code is a two-digit code used throughout the industry for each class of grain. It may also be referred to as a product code.

See also *grade code*.

groats

Groats are hulled grains, and refer to the caryopsis of domestic or wild oats; that is, it is the kernel with the hull removed.

See *caryopsis.*

hard vitreous kernels (HVK)

Vitreousness is the natural translucence of a kernel that is a visible sign of kernel hardness. Hard vitreous kernels (HVK) are a grade determinant for the amber durum wheat class in Canada and the red spring wheat class in western Canada.

HVK content is related to protein content and milling quality, which are particularly important in durum wheat. Non-vitreous kernels are produced under cool maturation conditions, abundant soil moisture and insufficient nitrogen. Flours milled from non-vitreous wheat have reduced protein content and produce poor loaf volumes. Non-vitreous kernels are not as significant in soft wheats, since low protein is desirable for most soft wheat end-products.

hazardous substance

A hazardous substance is defined in the Canada Grain Regulations as any pesticide, desiccant or inoculant.

hilum

The scar on a seed marking the point of attachment to its seed pod.

hulled

Hulled kernels have the hulls removed, e.g., oat groats, peeled barley and hulled sunflower seeds.

hulless

Hulless kernels have naturally loose hulls or no hulls, e.g., hulless oats and hulless barley.

identity-preserved

A parcel of grain which is kept separate from the bulk handling system.

- In a primary elevator, identity-preserved or special bin grain is held in a separate bin at the request of the owner.
- Grains with unique properties may be required to keep all production separate from the bulk handling system

imported grain

Imported grain means any grain grown outside Canada or the United States and includes screenings from such a grain and every grain product manufactured or processed from such a grain.

If the inspector suspects that a sample or shipment of grain is not of Canadian or American origin, the shipper must provide a letter indicating the country of origin, before official grading occurs.

Unofficial samples

Inspection services may be provided for samples of imported grains. Certificates or letters must clearly indicate that the grade provided is the grade the sample would qualify for if the grain had been of Canadian origin.

Official samples, terminal receipts

Inspection records and certificates specify the class of grain and, in place of the grade, the country of origin. For example, *Corn, Ukrainian origin.*

insect infestation

According to the *Canada Grain Act*, infested grain is grain that contains any injurious, noxious or troublesome insect or animal pest.

The Canada Grain Regulations establish procedures for handling infested grain at primary elevators. Grain found infested at terminal elevators is handled and treated under the direction of an officer of the CGC.

inspection certificate

See *Certificate Final and submitted sample certificate*

iodine value

Iodine value is a measure of the total amount of unsaturated fatty acids in an oil. In flaxseed, iodine values of 189 or greater are required for the manufacture of paints and inks. Lower values, around 182, are needed for the manufacture of linoleum.

laker

A laker is a long, shallow draft ship designed to transport cargoes within the inland water system of the St. Lawrence Seaway.

large seeds

Large seeds include whole and broken peas, lentils, corn, domestic and wild seeds with the exception of cereal grains and wild oats that remain on top of the No. 4.5 round-hole sieve. Large seeds are considered foreign material in some classes of grain.

loading order

A loading order is given by the terminal elevator operator to the inspector in charge. It indicates the quantity and grade of grain ordered for shipment.

manufactured products

Manufactured products are materials other than grain cleanings and includes materials such as malted, crushed, or ground grain which cannot be assigned a grade.

marine leg

A marine leg is a mechanical device used to offload bulk grain from the hold of a vessel, normally from a laker into a terminal elevator along the St. Lawrence.

mineral matter

Mineral matter refers to stones, earth pellets, fertilizer and screening pellets that may be found in samples of grain.

moist

A sample of grain is identified as moist if the moisture content exceeds the *damp* range established for that class of grain.

See Chapter 2, *Moisture testing*

moisture content

Moisture content is a measure of the water content of grain.

Grain that is within acceptable limits of moisture is referred to as a straight grade. With increasing moisture content, grain may be referred to as *tough, damp, moist* and *wet*.

See Chapter 2, *Moisture testing*.

mycotoxins

Mycotoxins are poisonous substances produced by some species of fungi.

For example, several Fusarium species can cause a disease called fusarium head blight. One of the more important species of fusarium, *Fusarium graminearum*, can produce several mycotoxins, most commonly, deoxynivalenol or vomitoxin, which, when present in feed grain, is distasteful and can reduce the rate of weight gain in some animals.

In corn, *Fusarium graminearum*, also called *Gibberella zeae*, causes the disease gibberella ear rot. Besides deoxynivalenol, another compound known as zearalerone may be formed. This compound has estrogen-like effects, especially in pigs and cattle.

non-vitreous kernels

See *hard vitreous kernels (HVK).*

not commercially clean

Shipments of grain whose dockage components exceed commercially clean allowable limits.

See *commercially clean*.

not for direct export

A shipment not for direct export is a domestic movement from a terminal elevator. The grain will be reloaded at a terminal elevator along the St. Lawrence for export and delivery to the buyer.

objectionable odour

An objectionable odour is one not normally associated with grain, such as skunk, sour, musty, oil, or gas. Heated or fireburnt odours are identified specifically and not included in the general category of objectionable odour.

Off-Grades of Grain and Grades of Screenings Order

The Off-Grades of Grain and Grades of Screening Order is issued by the CGC. It provides the authority for the application of the grading terms rejected, sample, tough, damp, moist, and wet, and defines grades of screenings.

The Off-Grades of Grain and Screenings Order is available at this address: https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._890/index.html

official inspection

An official inspection is done when an official sample of grain is graded by a CGC inspector.

See *official sample*

official sample

An official sample is a sample of grain taken from a parcel of grain by a person authorized by the Commission to take the sample or by any sampling device authorized by the Commission.

oilseeds

Oilseeds are crops grown for their oil. They include flaxseed, canola and rapeseed, soybeans, safflower and sunflower seed.

Order of Precedence

The following list is used to assign reasons for *Sample* grades.

1. Sample Condemned
2. Sample Salvage
3. Sample Account Fireburnt
4. Sample Account Excreta
5. Sample Account Fusarium
6. Sample Account Ergot
7. Sample Account Odour
8. Sample Account Rotted
9. Sample Account Heated
10. Sample Account Mildewed
11. Sample Account Damaged
12. Sample Account Damage and Foreign Material
13. Sample Account Dehulled
14. Sample Account Stained Kernels
15. Sample Account Sprouted
16. Sample Account Admixture
17. Sample Account Splits
18. Sample Account Lightweight
19. Sample Account Stones
20. Sample Account Mixed Colours

other matter

Other matter refers to inseparable material excluding cereal grains, large seeds, wild oats, stones, mineral matter, ergot and sclerotinia.

out of condition

Grain which is out of condition has deteriorated in storage. Grain that is damp, heating or spoiling in storage requires special treatment such as drying or aeration to preserve its quality or to prevent further deterioration.

Paragraph 76. (1) of the *Canada Grain Act* specifies that operators of licensed terminal elevator must inform the CGC if they find grain that is or is likely to go out of condition. The CGC may inspect the grain. The CGC tells the operator how to treat or dispose of the grain. If the grain has been special binned, the elevator operator may recover the costs of treating or disposing of the grain from the owner of the grain.

primary elevator

A primary elevator is a licensed elevator used to accept deliveries of grain directly from producers for storage or forwarding.

primary sample

A sample taken from a lot of grain during one single sampling action.

process elevator

A process elevator is an elevator which is used principally to receive and store grain for processing directly into other products.

processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported..

producer car

A producer car is a railcar that is loaded and shipped by a producer to a terminal elevator. Producers apply to the CGC to have a railcar allocated to them.

pulses

Pulses are the dried edible seeds of certain plants in the legume family.
Pulse crops grown in Canada include peas, lentils, chickpeas and beans.

registered variety

A variety of grain registered under the authority of the Canada Seeds Act.

rejected grades

Rejected grades are defined in the Off-Grades of Grain and Grades of Screenings Order. The term is not used in grading eastern grain. Numerical grades of western grain may be graded rejected only because of stones. If the stones are removed, the Rejected designation is dropped.

representative sample

A representative sample is a sample that accurately represents a given lot of grain. To ensure samples adequately reflect the entire lot of grain, proper sampling procedures must be used. Official samples are taken using continuous sampling devices. The CGC publishes a factsheet on sampling procedures, called *Taking a Representative Sample*.

roughage

Roughage is a type of foreign material found in grains. It includes chaff, loose hulls, empty seed pods, knuckles, etc., that are readily removable by aspiration, handpicking, or other cleaning procedures.

saltie

A saltie is a vessel designed for ocean navigation.

sample grades

Sample grades are defined in the Off-Grades of Grain and Grades of Screenings Order. Grain that is not eligible for Class I or II grades under the *Canada Grain Act* is graded *Sample*. With the exception of sample salvage, reference is made in all sample grades to Canada (CAN), Canada Western (CW) or Canada Eastern (CE); for example, *Barley, Sample CW Account Heated.*

Only the major grading factor forms part of the grade name. Secondary reasons for a sample grade are noted in remarks; for example, a sample of rye having a strong chemical odour and containing 9.0% by weight of heated kernels might have the following comments:

- The grade *is Rye, Sample CW/CE, Account Odour.*
- The inspector's remarks include *strong chemical odour, 9.0% heated.*

The remarks section of the inspection record for samples graded *Sample CW/CE/Canada* may include the following:

- For wheat, the class or classes of wheat eligible for sample grades
- The nature and concentration of admixture in samples graded Sample *CW/CE/Canada, Account Admixture*
- The kind of odour in samples graded *Sample CW/CE/Canada, Account Odour*

When sample grades are assigned, the reason shown for the grade is selected according to the Order of Precedence.

See *Order of Precedence*

sample interval

A sample interval is the time between the repeated sample-capturing action of a sample method or device.

sample salvage

Any grain salvaged from a wreck in transit containing over 2.5% by weight of stones or any other conspicuous ground material, removable or not, is graded *[class of grain], Sample Salvage.* For example, *Wheat, Sample Salvage*.

- Admixtures of inseparable seeds or other grains are disregarded if they do not exceed the tolerances permitted in the lowest grade of that grain.
- The composition of samples is indicated on inspection certificates

sawfly damage

The wheat stem sawfly has caused serious harvest losses to spring wheat in the prairie region. It attacks the base of stems causing tillers of mature plants to break off. Early swathing can reduce spring wheat harvest losses, but the most effective means of managing this insect pest has been the production of resistant cultivars.

scab damage

Scab damage refers to kernels of wheat that have been severely affected by fusarium. Scab damage is included in and assessed as fusarium damage for grade assessment. The

percentage concentration of scab damage may be recorded for specific markets upon request.

- Scab kernels must be completely dull, lifeless, with a chalky appearance, and
- Must have no semblance of soundness and no visible natural wheat colour, and
- Scab kernels must have a white or pinkish fibrous growth

Note: If there is any natural wheat colour, the kernel is not to be considered as scab damage

Schopper chondrometer

The Schopper chondrometer is a device used to measure the compacted bulk density of grain also known as its test weight. The grain is dropped inside a metal cylinder along with a heavy disc which pushes air out through the perforated bottom of the cylinder and compacts the grain. The compacted sample is weighed and the resulting bulk density values are used by the Canadian Grain Commission to create charts and calculators that convert the uncompacted weight of grains in a 0.5-L measure to a test weight value in kilograms per hectolitre.

sclerotia

Sclerotia are hard, compact masses of fungal mycelium that serve as resting or survival structures.

One type of sclerotia is the mass of fungal tissue produced by the soil-borne fungus *Sclerotinia sclerotiorum*, which attacks crops such as sunflower and canola. Infections result in yield loss. While it does not attack cereal crops, sclerotia may be found as contaminants in samples of cereal grains from infected fields.

screening pellets

Screening pellets are a manufactured product made by compressing dockage material to form hard cylindrical shaped pieces. Screening pellets are used in animal feed rations.

screenings

Screenings is dockage material that has been removed by cleaning from a parcel of grain. Screenings qualify for Class IV grades.

See Off-Grades of Grain and Grades of Screenings Order.

shrinkage allowances

Shrinkage means the loss in weight of grain that occurs in the handling or treating of grain.

Paragraph 30 of the Canada Grain Regulations specifies the maximum shrinkage allowance that may be made on the delivery of grain to any licensed elevator is zero. An *order* given by the CGC provides the calculation of moisture shrinkage allowed for tough, damp, moist or wet grain artificially dried at the producer's request at primary elevators.

sieves

Sieves are devices used to separate material of different sizes and compositions used in dockage assessment and grading procedures. Sieves may be handheld or machine type. The accuracy of sieves used by the CGC is regularly monitored.

See Chapter 3 of this guide, *Specifications for sieves*.

small seeds

Small seeds are considered foreign material in some classes of grain. It includes all seeds removable through a No. 4.5 round-hole sieve.

smut

See *bunt.*

soundness

Soundness refers to overall visual grain quality. Sound grain is reasonably well matured and reasonably free from damaged kernels.

special bin grain

In a primary elevator, special bin grain is held in a separate bin at the request of the owner. It is sometimes referred to as identity-preserved.

See *identity-preserved*

special cleaning

Special cleaning refers to any cleaning of grain in addition to the usual dockage assessment procedures. Special cleaning is used to improve the grade of the grain.

spiral cleaner

The spiral cleaner removes flat seeds from yellow mustard seed.

standards

The Eastern and Western Standards Committees meet twice annually and recommend to the CGC standards of grain for use in grading during that crop year.
Standards are prepared for most grades of grain and represent as nearly as possible the minimum quality of each grade, considering the predominant visual grading factors for that class of grain. They are used as visual guides to grading grain before and on delivery at terminal elevators, and on shipments from terminal elevators.

stowage

Stowage refers to the location or hold where grain has been loaded to a vessel.

straight

Straight grades of grain are those within accepted limits of moisture. With increasing moisture content, grain is graded *tough, damp, moist*, or *wet*.

See Chapter 2, *Moisture testing*

submitted sample

A submitted sample is an unofficial sample sent in by a grain company or producer for grading or for other tests. The CGC charges a fee for any analysis on a submitted sample.

submitted sample certificate

A submitted sample certificate is a certificate issued detailing the grading and analytical results of a sample submitted to the CGC, including samples submitted through final quality determination.

sweet

See *cool and sweet*

terminal elevator

A terminal elevator is a licensed elevator used principally to receive grain and condition grain for export.

An inland terminal elevator is an elevator—licensed as a primary elevator —for receiving and conditioning of the grain for direct or indirect export.

terms of delivery

Terms of Delivery refers to the deductions that will occur when a producer delivers grain in Quebec. All deductions are posted in the delivery points.

test weight

Test weight is the weight of a known volume of grain expressed in kilograms per hectolitre.

For procedures, see Chapter 1 of this guide, *Test weight*.

tombstone kernels

Tombstone kernel is an obsolete term for a fusarium-damaged kernel.

tough

A sample of grain is identified as tough if the moisture content exceeds the *straight* range established for that class of grain but is not *damp*.

See Chapter 2, *Moisture testing*

trade memo

The CGC issues trade memos to provide grading instructions, information about our procedures or information required to satisfy Canadian Grain Commission orders or regulations.

The current list of trade memos can be found at this address:
https://grainscanada.gc.ca/en/industry/memos/

treated seed and other chemical substances

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range from tiny flecks to complete coverage.

Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

unofficial sample

An unofficial sample is a sample drawn without the supervision of an employee of the CGC, or a CGC accredited sampling service provider.

unregistered variety

An unregistered variety is a variety not registered under the authority of the Canada Seeds Act. It is sometimes referred to as a non-registered variety.

See *registered variety*.

Variety Designation List

The Variety Designation List is established for wheat classes and for malting and food barley varieties.

The designation lists can be found at this address: https://grainscanada.gc.ca/en/grain-quality/variety-lists/

vomitoxin

Vomitoxin or deoxynivalenol (DON) is a mycotoxin produced by *Fusarium graminearum*.

weathered

Weathered is the deterioration in visual appearance of grain from its natural state, which may impact its end use functionality. Weathering is the result of exposure to environmental conditions such as: freezing temperatures, excessive heat, and rain. The degree of damage that results is dependent upon the length of time grain is exposed to, and the severity of the adverse weather conditions.

weed stain

A weed stain is a type of natural stain. A weed stain refers to

- The blotched or stained appearance of kernels caused by contact with the sap from green foliage of such weeds as Russian thistle
- Kernels with adhered foliage of weeds

wet

A sample of grain is identified as wet if the moisture content exceeds the *moist* range established for that class of grain.
See Chapter 2, *Moisture testing*

wild oats

Wild oats is an annual grassy weed. It reduces crop yield, increases dockage and cleaning costs, lowers the grade, and is costly to control. Seeds of wild oats vary in colour from white to black. They are normally more slender than domestic oats and have a slanting, circular, depressed scar—sometimes called a sucker mouth—at their base, and a bent twisted awn.

working tolerance

Where specified in this Guide, working tolerances are applied in addition to the established grading tolerances.

29. Active Grain Standards and Guides List

This section lists the active grain standards for the current crop year. The Canadian Grain Commission provides grain standards to the Canadian grain industry upon request, subject to availability. Industry members may contact the Canadian Grain Commission at 1-800-853-6705 or QAStandards-NormesAQ@grainscanada.gc.ca to request these standards.

Grain Standards

Wheat

Grade	Class	Year	Version
No. 1 Frost	Canada Western Red Spring	2021	1.1.1
No. 2 Frost	Canada Western Red Spring	2021	1.2.1
No. 3 Frost	Canada Western Red Spring	2021	1.3.1
No. 1 Mildew	Canada Western Red Spring	2025	1.1.1
No. 2 Mildew	Canada Western Red Spring	2025	1.2.1
No. 1 Mildew	Canada Western Amber Durum	2025	2.1.1
No. 2 Mildew	Canada Western Amber Durum	2025	2.2.1
No. 3 Mildew	Canada Western Amber Durum	2025	2.3.1
No. 1 Frost	Canada Western Amber Durum	2021	2.1.1
No. 2 Frost	Canada Western Amber Durum	2021	2.2.1
No. 3 Frost	Canada Western Amber Durum	2021	2.3.1
No. 4 Frost	Canada Western Amber Durum	2021	2.4.1
No. 1 Mildew	Canada Eastern Soft Red Winter	2025	1.1.1
No. 2 Mildew	Canada Eastern Soft Red Winter	2025	1.2.1
No. 1 Mildew	Canada Eastern Red Spring	2025	1.1.1
No. 2 Mildew	Canada Eastern Red Spring	2025	1.2.1
No. 1 Mildew	Canada Eastern White Winter	2025	1.1.1
No. 2 Mildew	Canada Eastern White Winter	2025	1.2.1

Oats

Grade	Class	Year	Version
Good Colour	Canada Eastern/Western	2021	03.1.2
Fair Colour	Canada Eastern/Western	2021	03.3.2

Peas

Grade	Class	Year	Version
No. 1	Canada Yellow	2018	13.1.1
No. 2	Canada Yellow	2018	13.2.1
No. 1	Canada Green	2024	13.3.1
No. 2	Canada Green	2024	13.4.1

Soybeans

Grade	Class	Year	Version
No. 1	Canada Yellow	2018	12.1.1
No. 2	Canada Yellow	2018	12.2.1

Beans

Grade	Class	Year	Version
Good Natural Colour	Canada, Pea Beans	2010	57.1.2
Reasonably Good Colour	Canada, Pea Beans	2010	57.2.2
Fairly Good Colour	Canada, Pea Beans	2010	57.3.2

Lentils

Grade	Class	Year	Version
Good Natural Colour	Canada other than Red (Green)	2018	55.1.3
Reasonably Good Natural Colour	Canada other than Red (Green)	2018	55.2.3
Fair Colour	Canada other than Red (Green)	2018	55.3.3
Reasonably Good Natural Colour, Adhered Soil	Canada other than Red (Green)	2018	55.7.1
Fair Colour, Adhered Soil	Canada other than Red (Green)	2018	55.8.1

The Canadian Grain Commission also maintains various tools to help aid in the assessment of objective grading factors. Industry members may contact the Canadian Grain Commission to request these guides.

Guides

Grading Factor	Class	Year	Version
Colour Guide, Distinctly Green	Canola / Rapeseed, Canada	2021	07.1.3
Colour Guide, Heated	Canola / Rapeseed, Canada	2021	07.2.3
Heated	Corn, Canada Eastern/Western	2026	14.1.1
Bleached	Peas, Canada Green	2009	13.5.1
Wrinkled Guide	Lentils, Canada Red	2015	55.5.1
Colour Guide, Copper / Bleached	Lentils, Canada Red	2015	55.4.1